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Appraisal of the Secondary Cities Regional Project in Korea

December 16, 1974

Transportation and Urban Projects Department

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International Development Association

CURRENCY EQUIVALENTS

Currency Unit	=	Won (W)
1 Won	=	US$0.0025
US$1	=	W 400
US$1 million	=	W 400 million

WEIGHTS AND MEASURES

1 Metric Ton (m ton)	=	2,205 Pounds (lbs)
1 Meter (m)	=	3.28 Feet (ft)
1 Pyong (py)	=	3.307 Square Meters (m^2)
1 Pyong (py)	=	35.586 Square Feet (sq ft)
1 Hectare (ha)	=	10,000 Square Meters (m^2)
1 Liter Per Capita Per Day (1 lpcd)	=	0.26 US Gallons Per Capita Per Day

ABBREVIATIONS/ACRONYMS

EPB	-	Economic Planning Board
GRDU	-	Gwangju Regional Development Unit
GRT	-	Gross Registered Tons
KECC	-	Korea Engineering Consultants Corporation
KECO	-	Korea Electric Company
KHB	-	Korea Housing Bank
KHC	-	Korea Housing Corporation
LLW	-	Lowest Low Water
MCI	-	Ministry of Commerce and Industry
MOC	-	Ministry of Construction
MOHA	-	Ministry of Home Affairs
MOT	-	Ministry of Transportation
MTD	-	Metric Tons a day
OOF	-	Office of Fisheries, Ministry of Agriculture
OSROK	-	Office of Supply, Republic of Korea
UPU	-	Urban Project Unit

GOVERNMENT OF KOREA FISCAL YEAR

January 1 to December 31

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

SUMMARY AND CONCLUSIONS

i. The economic growth of Gwangju region has been stunted during the last decade of extraordinary national growth by its remoteness from major markets, its underdeveloped transport network, and its relative failure to attract either public or private investment. Per capita income in the heavily agricultural region is among the lowest in the country. The region's rural areas are productive in relatively low value crops, and its urban areas are, with the exception of the administrative capital Gwangju City rather passive centers of the region's agricultural marketing and supply. The region contributes less than 8% of the nation's manufacturing employment, and generates 5% of the nation's manufacturing output. It contains 13% of the nation's population.

ii. Present Government plans call for a much greater level of public investment in both urban and rural areas. Major investments have already been made with the assistance of the Bank to expand and improve the transport network and to increase agricultural productivity. The proposed project is the initial component of a multi-phase investment program in Gwangju that is under preparation by the UNDP (Phase II, Regional Physical Planning Study) and scheduled for completion in September 1975. The project provides an important focus on the four secondary cities as employment and trade centers of Gwangju region, although project investments in urban infrastructure and in marketing and distribution facilities are modest and have been limited to first stage developments due to the postponement in Government development expenditures following the oil crisis. The project investments are designed to begin to develop the capacity of the cities to accommodate their increasing populations with basic urban amenities and with productive employment. Government plans are to increase manufacturing and mining employment in the region by three-fold between 1973 and 1981.

iii. The project provides essential institutional support for regional investment plans. It strengthens the Government's regional planning capability and establishes an institutional structure for ongoing regional planning and investment.

iv. The project's components are outlined below:

(a) Urban infrastructure including:

(i) housing sites and services in Gwangju City, Mogpo and Yeosu;

(ii) a fishery harbor complex with an industrial processing zone in Yeosu;

(iii) a city market in Suncheon; and

(iv) access roads in Mogpo and Yeosu.

(b) Technical assistance:

(i) to assist in the establishment and operation of the Gwangju Regional Development Unit (GRDU) at the provincial level of Government;

(ii) to strengthen regional planning at the national level of Government;

(iii) to provide advisory assistance for the management and operation of the Yeosu fishery harbor complex;

(iv) to prepare a program involving the provision of technical assistance in water supply operation and management and the identification of short-term improvements in the water supply systems in the four cities; and

(v) to carry out feasibility studies and the preparation of selected projects to be identified in the UNDP Phase II Study and in studies undertaken by MOC.

v. The proposed loan of US$15.0 million would cover 60% of the total cost (US$25.0 million) of the four-year project. The balance of the project costs would be provided by the Government (US$9.5 million) and Suncheon City (US$0.50 million for the city market). The foreign exchange component reflecting both direct and indirect costs represents 48% of total project costs.

vi. The Ministry of Construction as executing agency would be responsible for all construction. As the facilities are completed they would be turned over to the respective cities for ongoing operation and maintenance except in the case of the fishery harbor complex which would be maintained and operated by the Korean Government Office of Fisheries.

vii. The cities of Gwangju, Mogpo and Yeosu would repay the Government and the Korea Housing Bank the cost of land, site preparation and on-site infrastructure for the housing sites and services components. The Government would reimburse the cities for the costs of off-site infrastructure, engineering services, green areas and community facilities. The city of Suncheon would repay to the Government full construction cost of the market, which is equivalent to 60% of the total cost (which includes equity capital provided

by the city) of the market facilities. In the case of the Yeosu fishery harbor complex, the port operations are expected to generate sufficient revenues to cover expenditures for operation and maintenance and any surplus would be turned over to the Government.

viii. The Ministry of Construction would establish the Gwangju Regional Development Unit (GRDU) at the provincial level of government to help implement the project and appoint a Project Manager as head of GRDU. A Provincial Advisory Committee would advise the Project Manager on provincial development plans. Urban Project Units would be established in the mayor's office of each of the four cities to administer the sale of serviced housing sites and to plan and identify future projects. The Government would assign to the Vice Ministers Conference for Economic Affairs the responsibility of providing policy guidance for regional planning and development and to provide interagency coordination.

ix. Contracts for civil works and for supply of equipment would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines. Civil works would be grouped to the extent possible to encourage competitive bidding. Equipment, all of which is for the Yeosu fishery harbor complex, would be procured by the Office of Supply of the Republic of Korea (OSROK), the central procurement agency of the Government. A preference of up to 15% or the applicable custom duties, whichever is lower, would be applied to bidders offering locally manufactured goods.

x. Disbursements of the proposed Bank loan would be made in accordance with Bank guidelines and against: 100% of the CIF cost of imported equipment plus installation, 60% of the cost of civil works contracts, and 60% of consultants' services for studies, detailed engineering, design and supervision and technical assistance.

xi. The overall rate of return on the quantifiable elements of the projects (housing sites, roads, market and fishery harbor facilities) is 28%. This calculation excludes important non-quantifiable project benefits. The institutional development and planning assistance strengthens the capability of the Government to undertake regional development programs in Gwangju and other planning regions. The project is expected to stimulate the development of low-cost housing programs through the sites and services approach and by facilitating housing mortgages to low-income families. The Government is currently formulating a national housing policy, and the project experience will serve to guide further development of low-cost housing programs.

xii. The project initiates Korea's first regional investment program. The Government plans to develop investment programs for other regions as part of its objective set forth in the National Land Development Plan (1973-81) and the Third Economic Plan (1972-76) of widening the distribution of benefits from Korea's exceptional decade of growth, and balancing growth among regions. The project provides planning assistance in regional development

and an institutional framework for implementation of a public investment program in the Gwangju region that will serve as a prototype for other regional development programs.

xiii. The project is suitable for a Bank loan of US$15.0 million to the Government of Korea which would be for a term of 25 years including a grace period of 7 years.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

I. INTRODUCTION

1.01 The Government of the Republic of Korea has requested Bank assistance in initiating and implementing a regional development program for Gwangju,1/ a heavily agricultural region that has not shared in the social and economic benefits of Korea's striking industrial growth. The Government's strategy as articulated in the National Land Development Plan (1972-81) and in the Third Economic Plan (1972-76) seeks to correct regional imbalances by dispersion of industrial and urban activity and increase in agricultural productivity. The primary objective of the project is to establish and build up the institutional framework and capabilities required to implement the Government's development program in Gwangju. To this end, the project provides for technical assistance to the Gwangju Regional Development Unit (GRDU) to be set up and staffed at the provincial level and to the regional planning unit at the national level of Government. The planning and implementing framework will be a prototype for other regional investment programs. The project also includes modest investments in urban infrastructure (housing sites and services, access roads to industrial sites, a fishery harbor complex and a city market) designed to initiate the planned expansion of Gwangju's cities as manufacturing and marketing centers for increased agricultural output and as a new source of regional employment. Studies leading to further investments in urban infrastructure and improvements in urban services are included.

1.02 The project which would be implemented over a four-year period, is based on the recommendations of Phase I of a UNDP-financed Regional Physical Planning Study carried out by the consultants OTAM-METRA and on the follow-up identification of main project elements by a Bank mission in September 1972. Project preparation was undertaken by the Ministry of Construction (MOC) and its consultants, Korea Engineering Consultants Corporation (KECC). This report is based on the findings of an appraisal mission which visited Korea from November 20 - December 17, 1973 and was composed of Messrs. R.A. Sison (Chief of Mission), K.M. Gyi, S. Sandstrom and A. Saravanapavan of the Bank; F. Bourgois (FAO-IBRD/CP) and Mrs. M.O. Smith, Messrs. K. Hansen and P. Nichols (Consultants). Messrs. E. Njomo (Young Professional) and W. Guckian (FAO-IBRD/CP) also assisted in the preparation of the report. Following a Government decision in March to reduce the original size of the project in light of a reduction in the Korean development budget brought about by a sharp increase in the price of oil, Messrs. R.A. Sison and K.M. Gyi made subsequent visits to Korea in March/April and August 1974 for discussions.

1/ Gwangju region is located in the southwestern corner of Korea and consists of Jeonra Nam Province and two counties of Jeonra Bug Province.

II. BACKGROUND

A. The Economy and Recent Trends

2.01 In 1973, the Government issued a Long Term Perspective Plan (1973-81) which raised the target average annual growth in GNP from 8.6% to 9.5% for the period 1973-76, and to 11% for the period 1977-81. The Long Term Plan envisaged US$1,000 equivalent average income per capita and US$10 billion of exports by the early 1980's.

2.02 The steep increase in petroleum prices in late 1973 had a particularly severe impact on Korea, which depends heavily on imported fuel. The Government has reduced development expenditures temporarily, but has retained its development plan and expects to achieve its long term growth targets. This expectation is based on the very strong external and internal position of the economy prior to the increase in oil prices, and a continued reliance on large external borrowings.

2.03 On December 7, 1974, the Government took steps to intensify its export promotion activities, stimulate production and maintain employment. The exchange rate was devalued from Won 400 per US$ to Won 485 per US$. Export credits for imported raw materials and domestic goods were increased. Prices of petroleum products and electricity (except for households) and railway rates were raised between 31 and 42 percent. In the future, Government approval must be obtained for price increases for 58 selected basic items. The interest rate on time deposits has been increased to stimulate savings, and the bulk of Government investment for 1975 will be undertaken in the first six months of the year to create new jobs and offset the slack in the economy. Special credits have been instituted to spur private investment and additional financial assistance is being provided to small and medium businesses. About 330,000 new public jobs are being created and preference in hiring is being given to persons in the lower income group. About 87,000 new housing units are to be constructed by the Government in addition to the 120,000 previously planned.

2.04 A major objective of the Long Term Plan, to achieve a more balanced growth among sectors of the economy, has now become even more important in light of recent economic developments. The impact of rising prices and lagging wages, particularly on the agricultural sector, is likely to become severe and reinforce existing imbalances. Between 1960 and 1970, Korea changed from a relatively slow growing traditional agricultural economy to a semi-industrial economy. The manufacturing sector expanded at an average annual rate of 17% in contrast to the agricultural sector which expanded at an annual rate of 4%. The disparities in productivity and growth were reflected in an increasingly uneven distribution of social and economic benefits between urban and rural areas, and among regions.

2.05 In the 1960's, over three quarters of all new manufacturing employment was located in Korea's three major cities, Seoul, Busan and Daegu, which as dynamic industrial centers attracted heavy in-migrations. Between 1966 and 1970, Seoul increased in population by 9.8% a year, Busan by 7.2% and Daegu by 6.4%. The national average increase in population was 1.8% a year. By 1970 the three major cities accounted for 54% of the urban population (15.7 million) and 27% of the national population (31.5 million); the regions of Seoul and Busan alone contributed 51% of the gross national product.

B. Regional Problems and Disparities

2.06 Gwangju region in the southwest extremity of the country (Map 10970) is poor, backward and strongly oriented toward traditional agriculture. The region contains 4 million people, 3 million of whom live in rural communities. Although the region comprises 13,326 km^2 or 13% of the total land area of Korea, much of the land is mountainous and heavily forested; only 30% is arable. The result is high farm population densities - 706 persons per km^2 of cultivated land - which are found mainly along the south and west coastal area (where there is mixed farming and fishing) and inland to Gwangju City. Such high densities fragment farm land ownership (the average size is 0.8 ha) restrict efficient farming, and contribute to a high rate of rural out-migration.

2.07 Income levels in Gwangju area are among the lowest in the country. Seventy-two percent of the region's working population is employed in agriculture, forestry and fishing, compared to 50% for the nation; 8% is employed in mining and manufacturing, compared to 14% for the nation, and 20% in the transportation, communications, commerce and service sectors. Gwangju region's output is only 8% of the national product.

2.08 Average income per farm worker in Gwangju is less than half the average income per worker in manufacturing and mining, and the gap is widening. Between 1966 and 1972 value added per employee in agriculture fell by an annual average of 1.5% while in mining and manufacturing it rose by an annual average of 18.2%. The low level of farm incomes has had two effects. First, farmers are taking supplementary off-farm jobs; 17% of total farm household income derives from non-farm activities, and the percentage is expected to rise as supplementary job opportunities increase. Second, the rural population is diminishing. Between 1966 and 1970, the region's rural population declined by 6%. It is estimated that 85% of the rural migrants left the region, mostly for Seoul, and the balance went to Gwangju City, Mogpo, Suncheon and Yeosu within the region.

2.09 The cities of the region do not have the facilities to accommodate the population increases they have experienced. During the 1960s Gwangju City, the administrative capital, doubled in size (from 228,000 to 503,000) absorbing 69% of the four cities' population increase; the population of the four cities together grew from 525,000 (15% of the region's population) to 885,000 (22%). In 1970, only 60% of urban families had their own housing,

and the existing housing stock was badly overcrowded. Water supply and waste disposal systems became inadequate, and in Gwangju City 57% of urban households were served with piped water. Unemployment in the four cities reached 13% in 1970.

C. Government Programs for Gwangju Region

2.10 The backwardness of Gwangju can be attributed in part to a relative lack of public and private investment in the past. For example, in 1966 Government investments in Gwangju amounted to only W 5,000 (US$13) per capita, while the average national investment was more than twice as high or W 11,000 (US$28 per capita). The low level of investment accorded Gwangju throughout the 1960's retarded the diversification and modernization of the region's heavily agricultural economy. Gwangju's gross regional product increased at an average rate of about 4% between 1966 and 1970 while Korea's GNP increased at an average annual rate of about 11% (Annex 1).

2.11 The Government's investment targets in the new Long Term Perspective Plan are to correct the imbalances of the 1960's. While the energy crisis has caused the Government to reexamine its development budget, the Government has retained its plans to disperse industrial and urban growth away from Seoul, Busan and Daegu. Over half of total investment outlays in the Perspective Plan are for development of infrastructure (transportation, electricity, communications, industrial sites) and essential services (housing, health facilities, education) necessary to draw industries to Korea's secondary cities and accommodate their rising populations. Ten percent of investment outlays are for agriculture and rural public works.

2.12 The Government anticipates a doubling of the urban population in Gwangju region and a tripling of the urban labor force (including the increasing seasonal and part-time participation of farmers in off-farm activities) by 1981. Plans are to increase manufacturing and mining employment three-fold (from 104,000 to 293,000) and transportation, commerce and services employment two-fold (from 276,000 to 621,000). The change in employment structure would achieve an 11% average annual increase in regional product for Gwangju and should quadruple regional per capita incomes by the early 1980's. Disparities in average regional and national per capita incomes should begin to diminish.

2.13 The Government's strategy for balanced regional development through industrial decentralization and increased agricultural productivity, is based on Phase I of a UNDP Regional Physical Planning Study undertaken in 1969. Eight planning regions were designated by the Ministry of Construction and these regions were analyzed in terms of their resources, potentialities and constraints. The study proposed decentralization through the development of selected large regional centers and offered broad regional and urban planning guidelines which were incorporated in the National Land Development Plan, 1972-81 (Annex 2). Gwangju region was identified as the first area for development.

2.14 Accordingly, the Government has asked the UNDP to focus in its Phase II study (to be completed in September 1975) on developing a program of investments in urban and rural sectors of Gwangju. The program is to be aimed at the medium- and long-term growth of the region, and is to elaborate the regional development strategy of accelerated agricultural growth and industrial dispersion formulated in the Phase I study.

D. Urban and Rural Development

2.15 The Government has increased its level of public investment in the region over the past several years. Major investments have been made with Bank assistance (see para 2.17) to improve the region's transport network, and to expand and diversify agricultural production. In 1972 the Government increased its agricultural budget by 25% in support of the "New Community" or Sae Maeul Movement, a self-help program to raise agricultural incomes and productivity through small scale works and the provision of off-farm employment opportunities in cottage industries. The Sae Maeul Movement is particularly active in Gwangju region: in 1973, of US$57 million expended by the Government in support of the Movement, 18% was expended in Gwangju.

2.16 The increased level of public investment in Gwangju has begun to be matched by an increased level of private investment. The Government has granted special tax exemptions to private firms locating in the region, and as a result of a 1972 Ministry of Commerce and Industry study has designated certain industries for location around each city. In areas surrounding Gwangju City and Mogpo, industries have been identified which take advantage of the raw materials and labor surpluses of the region. The industries - food processing, textiles and machine manufacturing, glass making, fish processing and plywood - also develop the region's export potential. In areas surrounding Yeosu and Suncheon, heavy industries have been identified - steel, chemicals, metals, machine making, fertilizers, and petrochemicals. A fertilizer plant (the first of a series) is now under construction.

2.17 Industrial development, however, has been limited by the Government's inattention to the region's urban areas, particularly to urban infrastructure to support new manufacturing investments and the growing population of the cities. The cities have inadequate financial resources and poor management capacity to undertake more than piecemeal developments. Urban master plans map the intended growth of the cities, but they do not adequately take into account the requirements and resources of the urban areas, nor do they reflect central government investment plans. Urban investments have been for the most part uncoordinated and sporadic.

E. The Role of the Bank

2.18 The Bank has for several years financed projects in the Gwangju region. Bank investments in the transportation system have virtually opened up the region to major new markets. In 1973 Gwangju City was linked by national highway to Suncheon and other cities within the region, and to the major port of Busan (under Loan 769-KO; First Highway Project). Other road developments are now being carried out in the region with the assistance of the Bank (under Loan 956-KO; Second Highway Project). The Bank has also undertaken a program of developments in agriculture (Yong San Gang River Basin Irrigation; Livestock Development; Seed; Agricultural Credit; and Integrated Agricultural Products Processing projects), and has recently assisted the educational sector of the region (through a Second Educational Project).

2.19 The proposed project is designed to develop the capability of the Government to prepare and implement investments integrated in a regional context. It focuses on first stage investments in the urban areas of the region that are complementary to investments in the other sectors and that demonstrate the developmental role of the cities in the region.

III. THE PROJECT

A. Project Description

3.01 The project forms part of the Government's investment plan (1973-81) in the Gwangju region. It supports government initiative in establishing a regional development program in Gwangju and other planning regions through institutional development and regional planning assistance. The project focuses on Gwangju's four major cities as potentially dynamic centers in the region, and provides for investments in public services and facilities that are vital to the cities' long-term objectives of greatly expanded employment opportunities and an efficient pattern of development. The project, details of which are listed in Annex 3, consists of:

(a) Urban infrastructure including:

(i) Housing sites and services in Gwangju City, Mogpo and Yeosu (112,000 py); 1/

(ii) A fishery harbor complex with an industrial processing zone (65,130 py) in Yeosu;

(iii) A city market in Suncheon (10,029 py); and,

(iv) Access roads in Yeosu and Mogpo (6.61 km).

1/ 1 pyong = 3.307 m^2.

(b) Technical Assistance:

(i) to assist in the establishment and operation of the Gwangju Regional Development Unit (GRDU) at the provincial level of Government;

(ii) to strengthen regional planning at the national level of Government;

(iii) to provide advisory assistance for the management and operation of the Yeosu fishery harbor complex;

(iv) to prepare a program involving provision of technical assistance in water supply operation and management and identification of short-term improvements in the water supply systems in the four cities; and

(v) to carry out feasibility studies and the preparation of selected projects to be identified in the UNDP Phase II Study and in studies undertaken by MOC.

B. Detailed Features

Housing Sites and Services

3.02 The housing sites and services component is a pilot scheme representing the first stage of planned developments in the cities of Gwangju, Mogpo and Yeosu. The project component would provide 1,893 serviced plots and related community facilities covering an area of 37 ha out of a total area to be developed of 274 ha. The project constitutes a new approach to meeting the large housing deficit in Korea; it facilitates housing construction by low-income groups who have been unable to participate in public housing programs due to limited financial resources and high building costs (Annex 4). Under the project, financing would be made available for purchase of serviced plots - a distinct departure from the outright cash purchase of land required under existing programs. Site development would be low cost, and housing designs would allow for minimum cost and maximum self-help construction. The project aims at balanced community development; while 70% of the serviced plots would be made available to low-income families, and would allow multi-family occupancy consistent with Korean custom, the remainder at higher standards and costs would be made available to higher income groups. Low income beneficiaries would be selected by the cities based on agreed criteria (para 5.04). The Government is currently formulating a national housing policy and the experience gained under this project would serve to guide the development of low-cost housing programs.

3.03 In each city, several available alternative sites were investigated and priorities determined. Locational choice for the project sites was based on a number of factors including: (i) accessibility to job locations; (ii) price of land; (iii) consistency with the city's master plan; (iv) cost of major infrastructure; (v) availability of land suitable in size and natural conditions (topography, soil, water, etc.).

3.04 Site layouts were based on analysis of topography, soils, drainage patterns and natural features. Annex 5 describes the site characteristics, planning criteria and design standards. To realize economies, cluster development involving 50 to 75 lots and further divided into two to three smaller blocks varying between 20-25 lots was adopted. Separation between clusters is effected by the location of green areas. The locational arrangements and sizes of lots have been designed to allow for high population density (430 persons/ha) and efficient use of space. Between 73-76% of the total area is allocated to lots, 18-21% to circulation (footpaths and roads), 2% to community facilities and 4-6% to public areas.

3.05 Three sizes of serviced lots 35,50, and 70 py (equivalent to 116 m^2, 165 m^2, and 231 m^2 respectively) were selected as appropriate after a review of the likely pattern of spatial development in each city and desired minimum standards. Seventy percent of the lots would be 116 m^2 lots sold at cost to low-income families; 20% would be 165 m^2 lots sold at cost to middle-income families; 10% would be 231 m^2 lots sold at least 30% above allocated cost to high-income families. Cities would retain title to the plots sold to low and middle-income groups until repayment is completed. Specific covenants on the larger lots sold to high-income groups would ensure that land uses are in accord with the master plan. The lots have been designed to take full advantage of street frontage and minimize infrastructure costs. For instance, major circulation is by footpaths which connect all lots with public areas and facilities and serve as cluster entrances.

3.06 In designing the infrastructure, standards were reduced to the minimum consistent with sound engineering. A detailed analysis was made of the minimum requirements of each housing site and consideration given to the Ministry of Construction's prescribed standards and anticipated requirements for future urban growth. The minimal standards adopted are appropriate for conditions in Korea.

3.07 All lots would be serviced with individual connections for water supply, drainage and electricity. Households would continue to utilize the existing system of holding tanks for disposal of sewerage. The cities have adequate facilities (trucks, equipment and personnel) for the disposal of human wastes to meet the immediate requirements of the project. The preparation of feasibility studies for long-term improvements in sewerage, drainage and night soil disposal is included in the project. Footpaths (4 m wide) would provide major circulation for pedestrians and bicycles, and would connect all lots with public areas and facilities. Secondary roads (5 m wide) would be provided for vehicular and pedestrian access to residential plots. Main

roads (7 m to 9 m wide) would serve as collector roads linking the off-site access and circulation roads to secondary roads. Due to the small size of the housing sites and services components and the central location of the sites, the need for community facilities is relatively small. Only a small health clinic would be required in Mogpo. All three sites are within walking distance of existing primary schools that would be able to accommodate anticipated increase in enrollment.

3.08 Details of the proposed infrastructure facilities are described in Annex 5, and project layouts are provided in Map Nos. 11082, 11083 and 11085.

Housing

3.09 Although housing construction is not financed out of the loan, the appraisal mission reviewed proposed housing designs for low-income families. Because of extreme weather conditions in Korea, houses are built of more substantial materials than houses in more temperate zones and require additional costs for insulation and heating. Housing designs were scaled to a minimum to reduce costs as much as practicable without endangering the viability of each site. Further reduction in costs could come by way of a larger proportion of self-help labor. The proposed design for a 40 m^2 house has two bedrooms, one kitchen, one living room and one toilet. Families have a number of options on the design and can select alternative floor plans in which savings in construction costs can be realized through self-help labor. The total cost of the prototype house is about W 605,000 (US$1,500), less than half the W 1.5-2.0 million per housing unit presently being made available to low-income households. About 33% of the total construction cost is for insulation and heating. The houses are designed to accommodate eight persons. The average per capita building area is about 5.1 m^2 which compares favorably with other Asian countries. The cities through the Korea Housing Corporation would provide potential home builders technical advice on design, construction materials, and self-help construction techniques.

Yeosu Fishery Harbor Complex

3.10 Yeosu has two ports, an old port which is badly congested by passenger and coastal shipping and commercial fishing vessels, and a cargo port which handles exports and imports related mainly to heavy industry. Congestion and poor facilities at the old port have restricted fish landings by Yeosu's fishermen. The project component provides for the first stage construction of a new fishery harbor complex in the Gukdong area of Yeosu (see Map 11086). The harbor complex when completed would have an annual handling capacity of about 150,000 tons of fish and marine products landed by vessels operating in the coastal waters of South Korea and in offshore fishing grounds of the East China Sea, and a handling capacity for about 40,000 tons of frozen fish to be landed by deep sea trawlers. The harbor complex would shelter and service a motorized fishing fleet of about 360 vessels. The project component also provides for the development of serviced industrial sites for the establishment of fish processing plant and auxiliary services to the fishing industry. The sites would be provided with roads, water supply, drainage and electricity. About 23% of the area already has

four factories dealing with fish processing and canning. On the remaining sites it is proposed to locate about 11 factories dealing with fish processing canning, fish meal and powder and the manufacture of box containers. The site could be expanded towards the southwest to about 27 ha.

3.11 Briefly, the elements of the project component include:

(a) The construction of a fishery harbor consisting of:

(i) Site reclamation and earth works;

(ii) Construction of about 820 m of landing and berthing quays, and about 240 m of piers and abutments with a depth alongside of 6 m for the larger vessels, and 4 m for the smaller at lowest low water datum (LLW);

(iii) Construction of all infrastructure for the port complex (roads, water supply, electricity, drainage and sewerage works);

(iv) Provision and installation of services and facilities (oil bunkering, telephone lines, underground cables, and port area lighting);

(v) Construction of all port complex buildings (fish market, transit and storage warehouses, storage buildings for the fishing fleet, administrative and control building);

(vi) Procurement and installation of all mechanical handling equipment, including cold storage plant, ice making equipment, etc.; and

(vii) Procurement and installation of navigational aids (channel marking buoys, shore beacons, etc.).

(b) The industrial sites and services development of 12.5 ha of land adjacent to the fishery harbor for the fishing industry (roads, water supply, electricity, drainage, and sewerage works); and

(c) Consultants' services for the detailed engineering, design, and supervision of the works until completion.

3.12 The project would provide a safe harbor for all fishing vessels utilizing the port, and the landing and berthing facilities would provide efficient and speedy unloading of catches, servicing of vessels, and turn-around for the fishing fleet. The new berths could be used for vessels up to 110 GRT for the daily iced catches, and up to 1,000 GRT for the deep sea frozen catches. Space would be provided for future expansion of berthage and other additional processing facilities and extensions. Details of the project component are given in Annex 6.

Suncheon City Market

3.13 The proposed project component involves the construction of a city market complex on 3.3 ha of land with three buildings providing a total covered floor space of 0.42 ha which would cater for retail stalls (e.g. grain, fish and daily necessities). In addition, sheltered space of 0.16 ha for fresh produce, 0.99 ha of paved area for daily market and 0.90 ha of unpaved surface for 5-day market (so-called since market day is held every 5th day) have been provided. Retail stalls (average size 13 m^2) would have individual storage facilities and additional storage facilities would be provided by the market administration. Stalls would be awarded giving preference to merchants now renting in the old market. Differential pricing would be administered for stall location and size. Equipment for cleaning and servicing (e.g. garbage trucks) would be provided by the city. The site selected by the city government, located south of the city, is appropriate in size and has taken into account the future direction of urban growth. It is readily accessible and is served by arterial roads from outlying rural areas. Soil, drainage and topographical conditions are favorable and site planning has incorporated the requirements of vehicular traffic and pedestrian movements.

3.14 Two smaller city markets (about 1.14 ha) presently serve local needs in the northern and central parts of the city. Based on market surveys carried out by the city, the project would provide space sufficient to meet the requirements up to the early 1980's. The project layout is provided in Map No. 11084.

Access Roads

3.15 Access roads in Yeosu and Mogpo are needed to link the proposed housing sites to industrial or commercial centers of activity. In Yeosu, the access road would connect both the harbor complex and the housing site to the city and provide a direct access to the main highway. In Mogpo, the access road provides a direct link between the housing site and existing and proposed industrial sites. Construction and improvement of 6.61 km of urban roads including three bridges in Yeosu and two in Mogpo are involved. Detailed engineering of the proposed urban roads was undertaken by KECC. The road lengths selected for financing have been identified in each of the cities' master plans and form an integral part of the street system. Design criteria for speed, critical grade length, minimum vertical curves and minimum horizontal radii which were adopted from the MOC's "Highway Geometric Design Code" have been reviewed by the appraisal mission and appear reasonable for urban roads.

Technical Assistance

3.16 Consulting services would be required during the implementation of the project. Consultants to GRDU would assist the Project Manager with project implementation, engineering and technical supervision and project monitoring and evaluation. They would also assist GRDU in preparing a work program which would include review of the regional planning framework, review of sectoral investment programs, development of a program of self-help housing construction, mobilization of private investment, review of urban

GRDU work program

development plans, and development of a training program. A consultant in regional planning would be assigned to the MOC to assist the staff of the National Planning Bureau in the review of regional development policies and provincial programs as well as the investigation of a program for self-help housing construction for low-income families.

3.17 Assistance to the Office of Fisheries would be required for the management and operation of the fishery harbor complex in Yeosu. Advisory assistance would be provided to the Harbor Manager on the overall management of the port, development of operating and financial objectives, operation and maintenance of various port facilities, preparation of a master plan, programming of capital improvements, and coordination between existing ports in Yeosu and users of the new harbor complex. Present port charges would be examined. The level of tariffs, sufficient to cover operating and administrative expenses, maintenance and debt service requirements and some portion of future capital investments would be reviewed by consultants. Assistance would also be provided for day-to-day operation of fish vessels and vehicular traffic movements, development of access channels, off-shore safety regulations, and preparation of port expansion plans.

3.18 A large component of technical assistance is for the preparation of a program of immediate improvements that can be made with operational and management assistance to the four cities including the identification of short-term improvements in the water supply systems.

3.19 Consultants would also be employed to undertake feasibility studies of selected projects to be identified in the UNDP Phase II Study and in studies undertaken by MOC.

3.20 The general scope of work for consultants is shown in Annex 7. Agreements were reached during negotiations that consultants under the above technical assistance program would be employed on terms and conditions satisfactory to the Bank.

IV. COST ESTIMATES, FINANCING, COST RECOVERY AND PRICING

A. Cost Estimates

4.01 Cost estimates are detailed in Annex 3 and summarized below:

Project Components	In W Million			In US$ Million			% Foreign Exchange Component /2
	Local	Foreign	Total	Local	Foreign	Total	
A. Housing Sites and Services	1,071.6	720.0	1,791.6	2.7	1.8	4.5	51%
B. Yeosu Fishery Harbor Complex	1,678.5	1,709.5	3,388.0	4.2	4.3	8.5	52
C. Suncheon City Market	179.6	148.7	328.3	0.4	0.4	0.8	48
D. Access Roads	690.6	421.2	1,111.8	1.7	1.1	2.8	48
E. Technical Assistance:							
(i) Action Program	57.6	76.8	134.4	0.1	0.2	0.3	57
(ii) Advisory Assistance to GRDU and Regional Planning	34.8	162.0	196.8	0.1	0.4	0.5	82
(iii) Fishery Complex Management Assistance	74.8	93.2	168.0	0.2	0.2	0.4	55
(iv) Feasibility Studies and Preparation of Selected Projects	110.8	90.0	200.8	0.3	0.2	0.5	45
Subtotal	3,898.3	3,421.4	7,319.7	9.7	8.6	18.3	52%
Contingencies /1							
- Physical	410.1	438.9	849.0	1.0	1.1	2.1	52
- Price	891.2	940.1	1,831.3	2.2	2.4	4.6	51
Grand Total	5,199.6	4,800.4	10,000.0	12.9	12.1	25.0	48% /3

/1 Consisting of an overall physical contingency of 15%. For price escalation, compounded annually on base construction costs and physical as follows:

	1974	1975	1976-80
(a) Civil Works	18%	15%	12% p.a.
(b) Equipment	14%	11%	7.5% p.a.

/2 Percentage calculated on total, net of land acquisition costs.

/3 On total project costs.

4.02 Based upon the exchange rate of Won 400 to the US$ that prevailed prior to December 7, 1974 when the Won was devalued to 485 to the US$, the total cost of the project, inclusive of land acquisition costs, is estimated at W 10.0 billion (US$25.0 million). The foreign exchange component of W 4.8 billion (US$12.1 million) reflecting both direct and indirect costs, represents 48% of the total. The foreign exchange costs of the project will not be affected by the devaluation. The local currency costs will be higher if local prices rise as a result of the higher cost of imports in Won terms. The Government is taking measures to moderate price increases; rises in local prices resulting from the devaluation should be less than the amount of the devaluation. Local costs expressed in US$ will be somewhat less because of the devaluation. Cost estimates for access roads are based on detailed engineering and those for housing sites, city market and fishery port are based on advanced preliminary engineering. Cost estimates are based on early October 1974 costs. Physical and price contingencies together comprise 29% of the estimated total project cost, net of land acquisition. This is considered adequate because the price of land to be acquired for the project would be frozen and the implementation schedule for civil works is relatively short.

B. Financial Arrangements

4.03 The total project cost of US$25.0 million would be financed as follows:

Project Component	% of Total Project Cost	Source & Amount (in US$ Million)			
		Total Cost	Bank Loan	Government Contribution	City of Suncheon
Housing Sites and Services	24.2	6.05	2.08	3.97	-
Yeosu Fishery Harbor Complex	48.6	12.15	9.25	2.90	-
Suncheon City Market	4.9	1.23	0.74	-	0.49
Access Roads	15.3	3.82	1.93	1.89	-
Technical Assistance	7.0	1.75	1.00	0.75	-
	100.0	25.0	15.0	9.51	0.49

The Bank loan to the Government of Korea, amounting to US$15.0 million would cover 60% of total project costs. The Government would provide about US$9.51 million of total project costs, which would include US$2.4 million of Korea Housing Bank funds for housing sites. Suncheon City would provide about US$0.49 million for the construction of the Suncheon City market.

4.04 The Ministry of Construction as Executing Agency would be responsible for all construction. As the facilities are completed, they would be turned over to the respective cities for operation and maintenance, except in the case of the fishery harbor complex where the Office of Fisheries (a Government department) would be responsible for management and operation. For the housing sites and services, the cities would borrow funds from the Government and from the Korea Housing Bank (KHB) to cover expenditures for land acquisition, site preparation, civil works, green areas, engineering and the construction of off-site infrastructure and community facilities. The Government would reimburse the cities for the costs of engineering services, off-site infrastructure, community facilities, green areas and engineering by making appropriate payments to the cities in accordance with the cities amortization schedules for the Government and KHB loans. The terms of the cities' financial obligations to the Government would be as follows: (a) no interest would be charged until the development of sites is completed; (b) during the period of site development, the cities would pay to the Government on a quarterly basis all payments (down payments, monthly payments, cash sales) received from purchasers of the lots; and, (c) when the development of sites is completed, the cities would repay to the Government a sum equal to the expenditures incurred on the cities' behalf less the aggregate of lot purchaser payments paid to the Government during construction. The cities would also repay the KHB the loan taken specifically for the housing sites and services project component. For the Suncheon City market, the city would assume an obligation to pay the Government about US$0.74 million,

the portion of the Bank loan used to finance the market, at the time the market is completed and turned over to the city. These financial obligations would be incorporated in Subsidiary Loan Agreements between the Government and the cities. The ratification of the Subsidiary Loan Agreements is a condition for loan effectiveness.

4.05 The terms of the cities' repayment for the housing sites and services would be as follows: for that portion of the Government's loan, it would be over a period of 25 years, including a grace period of 7 years and at a rate of interest of 8% per annum on the amount outstanding from time to time; on the KHB portion, over a period of 15 years, including a grace period of 3 years at an interest rate of 8% per annum on the amount outstanding from time to time. For the market, the city of Suncheon would repay the loan to the Government over a period of 25 years, including a grace period of 7 years at an interest rate of 8% per annum on the amount outstanding from time to time.

4.06 Details of the financial arrangements are described in Annex 8.

C. Cost Recovery and Pricing

4.07 For the housing sites and services, the costs of land, site preparation and on-site infrastructure would be recovered from site occupants. The Government would absorb the costs of off-site infrastructure, community facilities, green areas and engineering. This financial arrangement implies that, with a total component cost of US$6.05 million (or W 2,418 million), US$3.39 million would be recovered directly from site occupants. The balance of US$2.66 million would be recovered through general charges, taxes and fees as described in Annex 9.

4.08 The entire cost of the Suncheon city market would be recovered from merchants through rentals and deposits. There would be monthly rentals for the buildings and the sheltered market, and daily rentals for the open market. The deposits would be non-refundable but a lessee could transfer his right to lease. In the case of Yeosu fishery harbor complex, the port management would obtain revenues from the sale of industrial sites, from the lease of port facilities, and from port charges and landing fees. From these sources plus income taxes from expanded activities, the Government would generate sufficient revenues to cover capital costs and ensure adequate funds for operation and maintenance.

Terms to Households

4.09 The cities would charge lot occupants the allocated cost for the 116 m^2 and 165 m^2 lots, and at least 30% above allocated cost for 231 m^2 lots. The individual lot prices and the total sale prices by the city are shown in

Annex 8. A 20% down payment on lot purchases would be required from low-income households buying the 116 m^2 lots. This amount of down payment is within the capacity of low-income families to meet because renters normally pay a deposit equivalent to W 70,000 per room which is refunded, without interest, when the renter leaves. A 50% down payment would be required from medium-income households buying 165 m^2 lots. The repayment terms for the balance would be 12% interest over 15 years, with no grace period for either households. Assurances to this effect were obtained during negotiations. The 231 m^2 lots would be sold on a cash basis only. The proposed interest rate to beneficiaries of 12% is higher than the present interest rate charged for public housing of 8%. The proposed interest rate would enable the cities to have a cushion for administrative expenses and cover any defaults. The Government is embarking on a major study of housing goals and policies and the question of appropriate interest rates for housing would receive particular attention in this study, in the overall context of both resource mobilization and housing costs.

4.10 Financing for the cost of housing construction for low- and middle-income site occupants would be made available by the Korea Housing Bank (KHB) through the cities. Up to 80% of the housing construction cost would be financed and the repayment terms would be 12% over 15 years which is higher than the prevailing 8% rate for public housing. In addition, initial debt service payments up to 15% lower than those required under constant monthly payments would be allowed although subsequent debt payments would increase over time to meet the full amount of the purchasers' debt obligation. Assurances to this effect were obtained during negotiations. High-income households (231 m^2 lots) are expected to arrange their own financing for house construction.

Monthly Charges

4.11 A household desiring to construct a 40.6 m^2 house on a 116 m^2 lot, assuming that the 20% down payment on the lot, and 20% down payment on the housing have been met, would experience the following monthly charges:

	US$		
Basic Charges	Yeosu	Mogpo	Gwangju
Land Development /a	13.31	12.53	12.32
Water	1.73	1.73	1.45
Sewerage and Waste Disposal	0.73	0.73	1.08
Electricity	2.50	2.50	1.25
Sub-total	18.27	17.49	16.10
Housing /b	12.58	12.58	12.58
Total	30.85	30.07	28.68

/a Terms: 20% down payment; balance at 12% for 15 years, with initial payment 15% below face value.

/b Terms: 20% down payment; balance at 12% for 15 years, with initial payment 15% below face value.

4.12 These monthly charges have been estimated for 1976. Assuming that low income households can devote no more than 25% of their monthly incomes to housing and utilities, over 80% of all households would have sufficient incomes (based on the estimated 1976 national income distribution) to afford a house on a 116 m^2 lot. If the calculation is adjusted to compensate for the lower average income in Gwangju region (see Table 1, Annex 5), households with incomes just above the 20th percentile in the income distribution curve would be reached. The project breaks important ground in Korea in focusing on low-income group demand for housing, and in low-cost housing construction techniques and financing. An examination of the experience of the combination self-help and contractor-assisted housing under the project would be made. In addition, an investigation of a program of total self-help housing construction designed to meet demands of the very lowest income groups in the country would be carried out during project implementation. Assurances were obtained during negotiations that the Government would undertake with consultant assistance, an evaluation of the sites and services experience and an investigation of an expanded program to include the lowest income groups.

Suncheon City Market

4.13 Merchants would pay an initial non-refundable deposit averaging US$54.4 per m^2 inside the buildings, and US$18.1 per m^2 in the sheltered market area. Monthly rents would be US$0.76 per m^2 inside the buildings, and US$0.38 per m^2 in the sheltered market area. Rents for the daily market would be US$0.04 per m^2, and US$0.05 per m^2 for the unpaved 5-day market. Agreement was reached that the city would impose these charges and rental fees at the time occupancy takes place.

Yeosu Fishery Harbor Complex

4.14 The industrial sites would be sold at a price of US$38 per m^2. Lease rents would be charged for the use of the fish auction market, ice-making equipment, oil bunkering facilities and storage sheds. These charges would be reviewed by the consultants during project implementation to reflect more accurately the level of tariffs needed to meet the financial objectives of the port operations.

D. Procurement

4.15 Contracts for civil works and for the supply of equipment, would be awarded on the basis of international competitive bidding in accordance with the Bank's guidelines. Civil works would be grouped to the extent possible to encourage competitive bidding. Equipment, all of which is for the fishery complex, would be procured by the Office of Supply of the Republic of Korea (OSROK), the Government's central procurement agency. OSROK would be responsible for advertising requests for tenders, issuing tender documents, evaluating

bids and awarding contracts. A preference of up to 15% or the applicable custom duties, whichever is lower, would be applied to bidders offering locally manufactured goods.

E. Disbursements

4.16 Disbursements of the proposed Bank loan would be made against the following items:

(a) 100% of the CIF cost of imported equipment plus installation;

(b) 60% of the cost of civil works; and

(c) 60% of consultants' services for studies, detailed engineering and design, supervision and technical assistance.

Savings in any category under the allocation of proceeds would be made available for cost overruns in any other category. In the event, however, that expenditures should exceed the present estimated cost of about W 10,000 million (US$25.0 million), such excess would be met by the Government. A schedule of estimated Bank disbursements appears in Annex 10. In order to start construction in the third quarter of 1975, detailed engineering is currently in hand. Retroactive financing of about US$150,000 for detailed engineering is included in the loan.

F. Accounts and Audit

4.17 A separate project account would be maintained by MOC. As facilities are completed and turned over to participating government agencies they would submit to MOC quarterly financial reports on pertinent project components. Agreements were reached during negotiations, that an annual audited record should be available to the Bank no later than six months following the close of the Government's fiscal year, until the completion of project implementation.

G. Supervision

4.18 About 100 man-weeks of Bank staff time is scheduled for supervision work during the four-year implementation period (Annex 11).

H. Environmental Considerations

4.19 The Government is aware of the possible negative environmental effects of the planned development of a petrochemical complex in Gwangyang Bay on the fishery resource areas in Yeosu. Studies have been commissioned to determine the effects of anticipated levels of water and air pollution, and policies are being developed accordingly. With respect to the fishery harbor complex component in the project, it was agreed during negotiations that the Government would impose strict environmental conditions on plants locating in the harbor complex to avoid pollution of the riverlets leading to Gamag Bay.

V. ORGANIZATION AND MANAGEMENT

A. Project Execution

5.01 The Government would be the Borrower of the Bank loan and would designate the MOC as Executing Agency. A Gwangju Regional Development Unit (GRDU) -- under MOC -- would be established at the provincial level (Chart 8482R) by Presidential Decree in order to ensure efficient cooperative arrangements among agencies involved in the project. MOC would appoint, prior to loan effectiveness, a suitably qualified Project Manager to head GRDU with the concurrence of the Bank.

5.02 Construction Phase: MOC through the GRDU would be responsible for all construction. An implementation schedule for individual components is set out in Chart 8788R. During the construction phase the GRDU would coordinate the details of project implementation, e.g. hiring of consultants, preparation of work tasks, schedules and deliveries etc.; and would be assisted by competent and qualified staff seconded from national government agencies, trainees from the cities and personnel from the provincial government of Jeonra Nam. The Government has agreed to employ qualified consultants for the execution of the project (e.g. detailed engineering, design, preparation of tender documents, supervision, etc.) and contractors acceptable to the Bank, upon terms and conditions satisfactory to the Bank.

5.03 Operation and Administration: Upon completion of the construction phase, MOC would turn over the facilities to appropriate agencies for management, operation and maintenance. A Project Agreement between the Bank and the provincial government - which has jurisdiction over the cities - would be undertaken with respect to the operation and administration of the housing sites, city market and access roads. The ratification of the Project Agreement is a condition for loan effectiveness. The Yeosu fishery harbor complex would be turned over to the Office of Fisheries - a government department. Each city would establish an Urban Project Unit (para 5.14) to be assisted

by the Korea Housing Corporation (KHC) principally for sale of serviced lots, for supervision of construction of low-cost (self-help) housing prototypes in each city, and for monitoring the project (Annex 12). During negotiations, it was confirmed that arrangements with KHC in the form of a service contract had been undertaken.

5.04 For the housing sites, selection of beneficiaries would be made by the Urban Project Units (UPUs). More definitive criteria would be developed but broadly they would include the following: level of income, employment status, family size, condition of present occupancy, amount and source of down payment, etc. Preference would be given to families who do not presently own a house and are working in commercial or industrial estates near the proposed project sites. The cities have had experience with occupant selection under the limited public housing programs undertaken previously.

5.05 A careful evaluation of progress is necessary so that the housing sites and services project could be effectively replicated. Funds for evaluation and monitoring of the project are provided as part of technical assistance. Specifically, an ex-post determination of the following would be made: (i) the rate of housing construction (including self-help), (ii) the extent of technical assistance received by site occupants from the Urban Project Units and the Korea Housing Corporation, (iii) the extent to which purchases of construction materials were made for self-help housing, (iv) the level of income and expenditure of households, (v) the location of housing sites vis-a-vis employment centers, community facilities, and others, (vi) the effect of demonstration housing on household response to low-cost methods and proposed designs, and, (vii) the effectiveness of financial arrangements with respect to terms, conditions and repayments.

5.06 During negotiations agreements were reached that the Government, would, as conditions for loan effectiveness: (i) enforce provisions of the Land Expropriation and Planning Laws, and freeze land prices to avoid speculation, by publishing necessary notices delineating land to be acquired for public purposes, and (ii) for the Fishery Harbor Complex component in Yeosu, the area southwest of the proposed site would be purchased or zoned and set aside for future expansion of the harbor.

5.07 The Yeosu fishery harbor complex would be turned over to the Office of Fisheries (OOF) for management and operation. The Office of Fisheries would appoint a harbor manager, an assistant manager for administration, a traffic officer, and a port engineer for planning and maintenance. The harbor manager who would be responsible for overall management of the port, the setting of financial objectives and operating guidelines would be assisted by qualified consultants (provided under technical assistance - see Annex 7) and supporting staff. The harbor manager would also be responsible for development of the fishery industrial zone and for the planning of future harbor facilities (Annex 12). During negotiations agreement was reached that the harbor management staff would be assisted by qualified staff and experienced consultants to be employed on terms and conditions satisfactory to the Bank.

5.08 During negotiations, it was confirmed that: (i) in Yeosu, the Government had temporarily stopped the sale of sites for fish processing plants until detailed site planning and layout have been completed; and (ii) had made necessary arrangements with the Korea Electric Company to provide off-site electrical facilities needed for the project.

5.09 The city of Suncheon would be responsible for the management and operation of the market facilities after completion of construction. The access roads would be turned over to the cities for maintenance. Presently, the cities are responsible for the maintenance of all urban roads and have the necessary equipment and personnel to maintain these roads reasonably well. The execution of the technical assistance studies and advisory services would be the responsibility of the GRDU (para 5.12).

B. Interministerial Policy Committee — assigned for interag. coord.

5.10 The Government has agreed that the Vice Ministers Conference for Economic Affairs chaired by the Vice Minister of the Economic Planning Board (EPB) and comprised of a senior representative of the President's Economic Affairs Office and Vice Ministers of Ministries of Construction, Agriculture and Fisheries, Home Affairs, Commerce and Industry, and Health would be assigned the responsibility of providing policy guidance for regional planning and development for all planning regions in Korea although initially only for Gwangju region. It would also provide interagency coordination with respect to the proposed project.

C. Provisional Advisory Committee

5.11 A Provincial Advisory Committee to be chaired by the Governor and to include the four mayors, regional representatives of the Ministries, and representatives of educational institutions and the private sector, would also be established to advise the Project Manager on major provincial programs. Agreement to this effect was reached during negotiations.

D. Gwangju Regional Development Unit

5.12 The formal establishment of GRDU would be a condition for loan effectiveness. The need for GRDU arises from the fact that a number of decision-making bodies in the local and provincial governments are involved in the implementation of the project, and that special organizational arrangements are required to coordinate the various bodies and to implement the project in its regional context. GRDU would have four sections: planning; engineering; management, accounting and training; and private sector promotion. Specific responsibilities of GRDU are:

(i) to supervise and coordinate the implementation of the Bank-financed project;

(ii) to appoint consultants and supervise the implementation of feasibility studies, the evaluation and monitoring of the housing sites and services component, and supervise the preparation and execution of an action program;

(iii) to provide technical assistance to Urban Project Units to be established in each of the participating cities;

(iv) to coordinate sectoral investment programs from the functional ministries into an integrated plan for the region; and,

(v) to prepare policy recommendations for a regional strategy to be submitted to the Provincial Advisory Committee, MOC, and the Interministerial Policy Committee.

5.13 Qualified staff from MOC, other ministries and provincial government and the participating cities would be seconded to the GRDU. It is envisaged that by the end of the project implementation period, the GRDU would have developed the capability to continue ongoing regional planning work. Agreements were reached during negotiations that the Project Manager would be assisted by qualified and experienced consultants hired on terms and conditions satisfactory to the Bank. The Project Manager would prepare and submit a work program and schedules for the implementation of project components (with appropriate CPM or PERT charts) no later than June 30, 1975.

E. Urban Project Units

5.14 An Urban Project Unit, attached to the Mayor's office, would be established to be responsible for the administration and operation of the housing sites, the planning and coordination of new capital investments, the identification of potential projects, and the monitoring of progress of the Bank-financed project. During negotiations, the Government agreed that the cities would establish Urban Project Units, suitably staffed, at the beginning of the construction phase of project component facilities. Assurances were also obtained that the Provincial Government would ensure that the cities would provide for the adequate maintenance of facilities constructed under the loan.

F. Training

5.15 The GRDU with the assistance of consultants would coordinate and provide training for staff assigned to Urban Project Units and other city personnel involved in the implementation of the project.

VI. SOCIAL AND ECONOMIC JUSTIFICATION

A. General

6.01 The primary objective of the proposed project is to develop the institutional framework required to implement the Government's development program for Gwangju. The project would also focus on several high priority investments identified in this program -- mostly investments which are complementary to others now being undertaken, and investments aimed at demonstration effects and institution building. The project would increase the productive capacity of the region in a comprehensive sense: facilities and technical assistance would be provided for expanded fishery activities and fish processing, for transportation, for trading of agricultural and industrial products, and for production of housing services. Within the region's four cities, the project would not only provide institutional support and certain critical infrastructure, but also help the cities achieve a more desirable and efficient spatial growth pattern in the future. The project would support the cities in their crucial roles as centers for many of the industrial, commercial and service activities that are vital to the successful implementation of the overall regional development program.

6.02 The housing sites and services components of the proposed project focus on a sector where new and more vigorous approaches are required. It complements efforts toward the formulation of a national housing policy and the implementation of a low-cost housing program. The stress on low-cost housing construction techniques, and careful monitoring and evaluation of the project should provide the experience required for further cost reductions during later site development stages; not only in the four secondary cities, but also elsewhere in Korea.

B. Economic Rates of Return

6.03 The economic rate of return (ERR) for the project as a whole is estimated at about 28%. For the individual cities and project components, the rates of return are as follows:

	%
Housing sites and services	
Gwangju	22
Mogpo	19
Yeosu	17
Fishery harbor complex - Yeosu	33
City market - Suncheon	17
Roads	
Mogpo	16
Yeosu	34
Total for all project components	28

The costs and benefits considered as well as sensitivity analyses results are described in detail in Annex 13.

6.04 In estimating the economic rates of return for housing sites and services in the three cities, the benefits were measured by the imputed annual rental value of comparable houses, while the costs were based on detailed housing construction cost estimates made during appraisal and on the opportunity cost of land. A similar calculation was made for the Suncheon market; the rental value of the store space in the market buildings and stall space in the open market area was estimated and considered in the light of the costs of land acquisition, site preparation, infrastructure and buildings, and of operation and maintenance. For the Yeosu fishery harbor complex, benefits were quantified on the basis of the sale of industrial sites at market value, on time and fuel savings for the existing fishing fleet, on the increased catch of fish by an expanded fishing fleet, and on various port facilities. The costs included both capital and operating costs of the port. Land valuation was high indicating a high opportunity cost. The benefits of the roads were determined by comparing vehicle operating costs and passenger travel times with and without the roads.

C. Employment and Income Distribution Effects

6.05 The project would have a direct employment effect averaging some 2,000 full-time construction jobs during the implementation period. The annual direct employment effect of the construction of houses (not part of the project) on the housing sites would be about 600 jobs, extending over about two and a half years. The long-term direct employment effect would be about 5000 jobs, mostly related to the fishery complex and the Suncheon market.

6.06 The project would benefit the population of Gwangju region, which has the lowest average income in Korea. Within the region, the project would also benefit the lowest income groups. Seventy percent of the housing lots would be allocated to low-income households. The benefits from the fishery harbor complex in Yeosu would mostly accrue to the local fishing population and boat owners. The net revenues after deduction of direct trip expenses would be shared among the crew members, the engineer, the captain and the owner according to certain percentages, normally 60% to the owner and 40% to the others. A portion of the increased revenues would therefore go to the crew members.

D. Regional Development

6.07 Over the four-year implementation period 1975-78, project funds would comprise more than 10% of the required net inflow of capital during this period, if the goal of raising the region's per capita productivity from the

present 65% to 80% of the national average is to be achieved by 1981. The project is also expected to induce substantial private investments.

6.08 The project would promote balanced regional development. It is complementary to the planned concentrated development of petrochemical and heavy industries in the Gwangyang Bay area and to large investments in water supply and agricultural processing industries, and it prepares the region for the secondary effects of these and similar developments.

E. Urban Development

6.09 The project components have been planned in relation to one another and to the planned growth of the cities. The housing sites and services would be located near major employment centers in the respective cities. In Yeosu, the housing site and the fishery harbor components would be located within walking distance of each other, and in Mogpo, the access road component would link the housing site to an existing industrial estate. The housing sites and services have, further, been planned so as to attract a socially mixed group of occupants. The project would help the cities by providing the infrastructure for a large portion of their planned expansion over the next few years while at the same time also providing the necessary funds for studies and feasibility studies of more specific infrastructure development projects in the near future.

VII. RECOMMENDATIONS

7.01 During negotiations, agreements were reached on the following principal points:

(a) Consultants would be employed for the execution of the project on terms and conditions satisfactory to the Bank (para 5.02);

(b) The repayment of the cities' loan obligations to the Government and KHB would be on terms and conditions as agreed with the Bank (para 4.04);

(c) The repayment of the housing site occupants' loan obligations to the cities would be on terms and conditions as agreed with the Bank (para 4.09);

(d) The funds required for housing construction in project sites for low- and middle-income families would be provided to the Korea Housing Bank for administration by the cities and would be on terms and conditions as agreed with the Bank (para 4.10);

(e) The harbor management staff would be assisted by qualified staff and experienced consultants to be employed on terms and conditions satisfactory to the Bank (para 5.07);

(f) Charges and rental fees for the Suncheon city market would be imposed at the time occupancy takes place on terms and conditions satisfactory to the Bank (para 4.13);

(g) The Government would assign to the Vice Ministers Conference for Economic Affairs, the responsibility of providing policy guidance for regional planning and development, and coordination with respect to the project (para 5.10);

(h) The GRDU would hire qualified consultants acceptable to the Bank upon terms and conditions satisfactory to the Bank and that the Project Manager, assisted by the consultants and staff, would prepare a work program and implementation schedule for the GRDU by no later than June 30, 1975 (para 5.13);

(i) A Provincial Advisory Committee chaired by the Governor of Jeonra Nam Province and whose function shall be to advise the Project Manager on major development programs to be carried out in Gwangju region, would be established (para 5.11); and

(j) An Urban Project Unit would be established in the Mayor's Office in each of the four cities at the beginning of the project construction period, and would be responsible for the administration and operation of the serviced housing sites, and the planning and identification of future urban projects (para 5.14).

7.02 Conditions of loan effectiveness would be that:

(a) The MOC had established a Gwangju Regional Development Unit (GRDU) to supervise, coordinate and support the implementation of the project, and to provide policy and program recommendations for the region, and appoint a suitably qualified Project Manager as head of GRDU (paras 5.01 and 5.12);

(b) The Government had, under authority of the Land Expropriation and Planning Laws, published notices delineating the areas and frozen the prices of land to be acquired for the project, and purchased or zoned the area southwest of the proposed new harbor site in Yeosu for future expansion (paras 5.06 and 5.08);

(c) The Project Agreement has been duly authorized and ratified (para 5.03); and,

(d) The Subsidiary Loan Agreements have been ratified (para 4.04).

7.03 The project is suitable for a Bank loan of US$15.0 million equivalent to the Government of the Republic of Korea for a term of 25 years including a grace period of 7 years.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Gwangju Economic Development Prospects

Economic Growth and Structural Change in Korea

1. Between 1960 and 1972, Korea's gross national product grew at an impressive annual rate of 8.6% (see Table 1). During the same period, the population growth rate declined (from 2.6%) in 1960 to 1.5% in 1972), resulting in an average annual growth in real per capita GNP of 6.3%. By 1972, per capita GNP was US$300 in current prices.

2. The growth of the Korean economy was marked by a rapid increase in labor productivity (averaging 5.4% per year), a structural shift of employment from primary to secondary and tertiary sectors (increasing at 8.6% per year and 5.4% per year respectively) and high marginal rate of savings. 1/

3. Notwithstanding temporary cutback of the development budget due to the energy crisis in late 1973, the Government is maintaining present long-term economic plans to continue the general growth pattern of the 1960's. 2/ Continuation of the structural shift in employment is planned: by 1981, 35% of employment would be in the primary sector, 23% in the secondary sector and 42% in the tertiary sector compared to the present respective distribution of 51%, 14% and 35%. Continued increase in the average savings rate (to 32% by 1981) and in per capita GNP (by 8.7% a year) is planned, and a US$1,000 equivalent average income per capita envisaged by the early 1980's. Manufacturing would continue to play a dominant role in Korea's development, accounting for more than half of the planned growth.

4. An important objective of the economic plans is elimination of the disparity between urban and rural incomes by 1981. The ratio of farm household income to urban wage and salary earner household income was 83% in

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1/ See IBRD, Current Economic Position and Prospects of the Republic of Korea, February 20, 1974.

2/ These plans are expressed in Long Term Perspective Plan; Major Economic Indicators of the Korean Economy (1973-1981), Economic Planning Board Republic of Korea, June 1973, which in effect supersedes the Third Five-Year Economic Development Plan (1972-1976).

1972. 1/ Comparability is to be achieved by increasing agricultural productivity by 5.6% a year, and by providing more off-farm employment opportunities for farm households. An increase in the percentage of off-farm income to total farm household income from 17% in 1972 to 50% in 1981 (a target which is likely to be adjusted downward) is envisaged in the plans. 2/

Gwangju's Economy

5. Most indicators show that Gwangju's economy is less developed than the rest of Korea (see Table 1). Gross value added per capita is only 65% of the national average. Seventy-two percent of employment is in the primary sector, compared to 50% for the nation, while only 8% is in the secondary sector compared to 14% for the nation. The rate of growth of the regional economy is lower than the average rate for the nation, and has been declining in relation to the national growth rate (from 94% during 1960-66 to 43% during 1966-72). One major consequence of the region's poor economic growth has been a substantial net outmigration from the region amounting to about 2% annually since the mid 1960's. Although the rate of outmigration has slowed since 1970, it can be expected to accelerate if far more employment opportunities are not provided. Current projections are of a labor force of 2.3 million by 1986 in Gwangju region - representing an increase of 800,000 over the region's 1970 labor force. 3/

6. There are several factors that help to explain the relatively low level of economic development in Gwangju. First, the region is located in the southwest corner of Korea and has been, until recent improvements in the internal transport system were made, remote from major national population and market centers. The new Honam Highway (financed in part under Bank Loan 769-KO) linking Gwangju to the national highway system has reduced this disadvantage substantially. Second, the region has traditionally been used for agricultural production and foreign export. Growth of the agricultural sector has tended to be far slower and more erratic, and value added from agriculture far below that in other sectors. Third, Government emphasis over the last decade has been on the rapid expansion of industrial areas of the country. Public and private investment in Gwangju has been relatively modest relative to the national average. In 1966, for instance, about W 5,000 per capita was invested in Gwangju versus a national average of about W 11,000 per capita. Table 2 shows the result of a more detailed analysis

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1/ Rural households are larger than urban households which means that the ratio between the per capita incomes was even less than 83%. On the other hand, the average urban household income (for which data is not available) is likely to be less than the wage and salary earner household income used in most analyses.

2/ Major Economic Indicators of the Korean Economy (1973-1981), op. cit., Table VI-I.

3/ UN sponsored International Review Panel (July 29 - August 8, 1974), Background Information.

of the savings/investment and capital flow situation for Grangju 1/ indicating that in 1966 as much as 24% of the local savings may have been diverted to other parts of Korea. Government investment priorities are changing as reflected in current actions and plans.

Plans for Gwangju

7. Present plans call for a reversal of the development pattern in Gwangju. Substantial government investments are planned for the region over the next few years, among them the development of the Gwangyang Bay industrial complex. The UN is undertaking Phase II of a Regional Physical Planning Study to assist the Government in preparing and implementing a comprehensive regional development plan based on regional development strategies formulated in the Phase I Study completed in 1972 and incorporated in national plans. 2/

8. The macro-economic features of the Government's plans for the period 1972-81 are presented in Table 1 as Alternative 1. The plans aim at a reversal of development trends in Gwangju but the rate of growth and implied investments appear unrealistic in the near term (1972-76). Alternative II is hypothesized which assumes a more gradual change but retains the long-term economic targets for Gwangju: by 1981, regional value added per capita would be 80% of the national average compared to 65% in 1972; employment in the primary sector would be 50% of total employment compared to 35% for the nation; manufacturing employment would increase more rapidly in the region than in the rest of Korea.

9. Two aspects of the development pattern proposed for Gwangju are particularly important. First, a high rate of increase in labor productivity in the primary sector is planned -- 7.5% to 9% annually, compared with a national average of 5 to 6%. The agricultural conditions are such that a rate of increase of this magnitude appears feasible, but a precondition is that the necessary investments be made in water resources development for irrigation purposes and that funds be made available for conversion of farmland to more high-value crops and for the development of agro-industries

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1/ Table 2 is based on Table 1 and a more detailed analysis of the variation of savings rates with per capita income levels. One important assumption underlying Tables 1 and 2 is that the marginal capital/output ratios for Gwangju would be equal to the national ratios.

2/ The following three Ministry of Construction publications present these plans: National Land Development Plan 1972-1981, 1971; Basic Guidelines for the Development of Kwangju Region, July, 1970; Guidelines for the Development Planning of Yeosu and Suncheon Sub-Regions, December, 1972. More specific economic projections have presently been prepared by the UNDP/MOC Regional Development Economic Study Team: Gwangju Region - Population, Employment, Output and Manufacturing Coefficients -- Past Trend and Projections, November 1973, (shown as Alternative I in Table 1).

to further process the region's agricultural products. The conversion of farmland to high-value crops may be unfeasible given present government policy to achieve self-sufficiency in rice production.

10. Second, a 20% annual rate of growth in manufacturing output is planned up to 1981. This very high rate of growth is necessary to bring the income level in the region closer to the national average. The dispersion of manufacturing growth within the region to provide greater supplemental off-farm employment opportunities for farm households is also necessary to reduce the income disparities between urban and rural populations.

11. In order for the region to reach the economic targets for 1981 a substantial net inflow of capital would be required, as indicated in Table 2 summary. It is likely that as much as 40% of the required investment capital would have to come from outside the region throughout the 1970's, a percentage that would decline to about 25% by 1981. Little data is available to verify whether the present capital flows are even close to the ones that would be required. However, there are indications that the net inflow of capital may be substantial at the present. For instance, over the last couple of years some W 30 billion have been invested in the Honam Highway and between 1972-1977 about W 36 billion will be invested in the Yong San Gang irrigation project, with most of the capital coming from outside the region. Also, if present plans for petrochemical and related industries in the Gwangyang Bay area are implemented, the net inflow of capital would certainly exceed the ones required to achieve the proposed high rate of manufacturing growth in the region.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic and Demographic Profile of Korea and Gwangju, /1 1960-1981

	VALUE ADDED											
	Billion Won (1970 Prices)				% of Total				Annual Growth Rate (%)			
	Primary (1)	Secondary (2)	Tertiary (3)	Total (4)	Primary (5)	Secondary (6)	Tertiary (7)	Total (8)	Primary (9)	Secondary (10)	Tertiary (11)	Total (12)
A. KOREA												
1960	466.6 /9	136.8 /9	526.3	1,129.7 /9	41.3	12.1	46.6	100.0				
									6.2	12.3	6.7	7.2
1966	667.9 /9	274.6 /9	776.7	1,719.2 /9	38.8	16.0	45.2	100.0				
									2.1	21.1	13.2	10.8
1970	724.6 /9	590.7 /9	1,274.0	2,589.3 /9	28.0	22.8	49.2	100.0				
									3.2	16.1	7.0	8.1
1972	771 /11	796 /11	1,460 /11	3,027 /11	25.5	26.3	48.2	100.0				
									4.7	16.6	7.5	9.5
1976	928 /10	1,473 /10	1,950 /10	4,351 /10	21.3	33.9	44.8	100.0				
									4.7	16.4	9.1	11.0
1981	1,167 /10	3,145 /10	3,019 /10	7,331 /10	15.9	42.9	41.2	100.0				
B. GWANGJU /1												
1960	85.2 /9	6.9 /9	35.5 /9	127.6 /9	66.8	5.4	27.8	100.0				
									6.5	14.2	5.9	6.8
1966	124.3 /9	15.3 /9	50.0 /9	189.6 /9	65.5	8.1	26.4	100.0				
									-2.1	19.1	12.9	4.5
1970	114.3 /9	30.8 /9	81.2 /9	226.3 /9	50.5	13.6	35.9	100.0				
									-1.4 /17	14.6 /17	6.8 /17	3.9
1972	111.1	40.5	92.6	244.2	45.5	16.6	37.9	100.0				
Alt. I /2												
1972												
									8.3	32.3	18.4	17.1
1976	153 /10	124 /10	182 /10	459 /10	33.3	27.0	39.7	100.0				
									4.5	13.7	10.4	9.6
1981	191 /10	236 /10	298 /10	725 /10	26.3	32.6	41.1	100.0				
Alt. II /2												
1972												
									5.8	21.4	12.8	11.5
1976	139	88	150	377	36.9	23.3	39.8	100.0				
									7.5	22.4	13.2	13.8
1981	200	242	279	721	27.7	33.6	38.7	100.0				

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic and Demographic Profile of Korea and Gwangju, /1 1960-1981

EMPLOYMENT												
Persons (000)				% of Total				Annual Growth Rate (%)				
Primary (13)	Secondary (14)	Tertiary (15)	Total (16)	Primary (17)	Secondary (18)	Tertiary (19)	Total (20)	Primary (21)	Secondary (22)	Tertiary (23)	Total (24)	
												A. KOREA
4,620 /6	531 /6	1,885	7,036 /6	65.7	7.5	26.8	100.0					1960
								1.4	10.0	6.2	3.5	
5,013 /6	940 /6	2,706	8,659 /6	57.9	10.9	31.2	100.0					1966
								-0.9	9.9	5.7	2.5	
4,834 /8	1,369 /8	3,371 /8	9,574 /8	50.5	14.3	35.2	100.0					1970
								2.5	2.0	2.3	2.3	
5,078 /13	1,423 /13	3,525 /13	10,026 /13	50.6	14.2	35.2	100.0					1972
								-0.9	10.5	5.1	3.0	
4,892 /8	2,119 /8	4,293 /8	11,304 /8	43.3	18.7	38.0	100.0					1976
								-0.9	7.8	5.4	3.4	
4,674 /8	3,088 /8	5,593 /8	13,355 /8	35.0	23.1	41.9	100.0					1981
												B. Gwangju /1
1,023 /6	45 /6	179	1,247 /6	82.0	3.6	14.4	100.0					1960
								-0.6	15.5	5.5	1.2	
986 /6	107 /6	247	1,340 /6	73.6	8.0	18.4	100.0					1966
								-0.2	- 0.7	2.8	0.3	
977 /8	104 /8	276 /8	1,357 /8	72.0	7.7	20.3	100.0					1970
								-0.4	0.0	-0.4	-0.3	
970	104	274	1,348	72.0 /19	7.7 /19	20.3 /19	100.0					1972
												Alt. I /2
												1972
945 /8	172 /8	413 /8	1,530 /8	61.8	11.2	27.0	100.0					
								-0.7	13.4	10.8	3.2	1976
875 /8	293 /8	621 /8	1,789 /8	48.9	16.4	34.7	100.0					
								-1.6	11.2	8.5	3.2	1981
												Alt. II /2
												1972
858	156	375	1,389	61.8	11.2	27.0	100.0					
								-3.1	10.6	8.2	0.6	1976
801	269	569	1,639	48.9	16.4	34.7	100.0					
								-1.4	11.5	8.7	3.4	1981

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic and Demographic Profile of Korea and Gwangju, /1 1960-1981

	VALUE ADDED PER EMPLOYEE								Number of Unemployed Persons (000) (33)	Labor Force (000) (34)	Population	
	Thousand Won (1970 Prices)				Annual Growth Rate (%)						Persons (000) (35)	Annual Growth Rate (%) (36)
	Primary (25)	Secondary (26)	Tertiary (27)	Total (28)	Primary (29)	Secondary (30)	Tertiary (31)	Total (32)				
A. KOREA												
1960	101	258	279	161					N.A.	N.A.	24,989 /3	
					4.7	2.1	0.5	3.6				2.6
1966	133	292	287	199					666 /5	9,325 /5	29,160 /3	
					3.1	10.2	7.1	7.9				1.9
1970	150	431	378	270					446 /5	10,020 /5	31,435 /3	
					0.7	13.9	4.7	5.8				1.5
1972	152	559	414	302					474 /13	10,500 /13	32,359 /13	
					5.7	5.6	2.3	6.3				1.5
1976	190	695	454	385					457 /7	11,761 /7	34,345 /7	
					5.6	7.9	3.5	7.4				1.3
1981	250	1,018	540	549					408 /7	13,763 /7	36,709 /7	
B. GWANGJU /1												
1960	83	153	198	102					N.A.	N.A.	3,489 /3	
					7.2	-1.1	0.3	5.5				2.5
1966	126	143	202	141					54 /5	1,392 /5	4,052 /3	
					-1.9	19.9	9.8	4.3				-0.3
1970	117	296	294	167					18 /5	1,375 /5	4,006 /3	
					-0.9	14.6	7.2	4.1				-0.3 /18
1972	115	389	338	181					18	1,366	3,982	
Alt. I /2												
1972												
					8.9	16.7	6.9	13.5				1.3
1976	162	721	441	300					16 /7	1,546 /7	4,193 /4	
					6.1	2.2	1.7	6.2				2.0
1981	218	805	480	405					21 /7	1,810 /7	4,637 /4	
Alt. II /2												
1972												
					9.0	9.8	4.2	10.6				1.5
1976	162	565	399	271					56	1,445	4,226	
					9.0	9.8	4.2	10.2				1.3
1981	250	900	490	440					51	1,690	4,508	

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SECONDARY CITIES REGIONAL PROJECT

Economic and Demographic Profile of Korea and Gwangju, /1 1960-1981

Labor Force Participation Rate (%) (37)	Unemployment Rate (%) (38)	Value Added Per Capita: Thousand Won (1970 Prices) (39)	Value Added Per Capita: Annual Growth Rate (%) (40)	Marginal Capital/Output Ratios (Gross, one-year lag) /15: Primary (41)	Secondary (42)	Tertiary (43)	Total (44)	Gross Investment /16: Billion Won (1970 Prices) (45)	Gross Investment /16: % of Value Added (46)	
										A. KOREA
N.A.	N.A.	45						N.A.	N.A.	1960
			4.6	N.A.	N.A.	N.A.	N.A.			
32.0	7.1	59						318/14	18.5	1966
			8.6	1.50	1.12	2.70	2.05			
31.9	4.5	82						705/14	27.2	1970
			7.1	2.61	1.96	4.70	3.18			
32.4	4.5	94						666/12	22.0/12	1972
			7.8	2.65	1.57	3.82	2.53			
34.2	3.9	127						1,177/12	27.0/12	1976
			9.5	3.31	1.77	3.89	2.66			
37.5	3.0	200						2,328/12	31.8/12	1981
										B. Gwangju /1
N.A.	N.A.	37						N.A.	N.A.	1960
			4.1	N.A.	N.A.	N.A.	N.A.			
34.4	3.9	47						19	10.0	1966
			4.5	1.50	1.12	2.70	-			
34.3	1.3	56						38	16.5	1970
			4.4	2.61	1.96	4.70	-			
34.3/18	1.3/18	61						-	-	1972
										Alt. I /2
								102	44.6	1972
			15.6	2.65	1.57	3.82	-			
36.9	1.0	109						127	27.7	1976
			7.4	3.31	1.77	3.89	-			
39.0	1.2	156						208	28.9	1981
										Alt. II /2
								76	31.1	1972
			9.9	2.65	1.57	3.82	-			
34.2	3.9	89						146	38.7	1976
			12.4	3.31	1.77	3.89	-			
37.5	3.0	160						290	40.2	1981

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic and Demographic Profile of Korea and Gwangju, /1 1960 - 1981

(Footnotes)

N.A.: Not Available

Primary sector : Agriculture, forestry, and fisheries
Secondary sector: Mining and manufacturing
Tertiary sector:: Other industries

The estimates have been derived from data provided elsewhere in the table when no source is indicated.

/1 Only Gwangju province. Gwangju region also includes two guns in Jeonra Bug Do Province (Namwon and Sunchang), with about 7% of the regions population.

/2 Alternative I: The 1976 and 1981 targets are equal to those presented by the UNDP/MOC Regional Economic Study Team in November, 1973 (see notes 3/ - 10/). These targets imply that value added per capita in Gwangju would be 22% less than the national average in 1981, as compared to 35% less in 1972.

Alternative II: The discrepancy between Gwangju and Korea in value added per capita would be reduced from 35% in 1972 to 20% in 1981, with the growth path for the region's economy similar to the national one. The regional population growth rates, labor force participation rates and unemployment rates for 1976 and 1981 have been set equal to the projected national rates. It has also been assumed that the regional labor productivity in the primary sector will be equal to the national average in 1981, that labor productivity in the secondary and tertiary sectors will be about 90% of the national average in the same year, and that the sectoral distribution of employment will be the same as the one projected in Alternative I by 1981.

/3)
/4) Gwangju Region -- Population, Employment, Output, and Manufacturing Coefficients -- Past Trend and Projections, (Data Series I), Regional Development Economic Study Team,
/5) UNDP/MOC, November, 1973;
/6) 3/: Table 1-1-1; 4/: Table 1-2-2; 5/: Table 2-1-1; 6/: Table 2-1-4; 7/: Table 2-2-1; 8/: Table 2-2-2; 9/: Table 3-1; 10/: Table 3-2.
/7)
/8)
/9)
/10)

/11) Major Economic Indicators of the Korean Economy (1972-1981), EPB, ROK, June, 1973;
/12) 11/: Table I-2; 12/: Table I-6; 13/: Table II-1.
/13)

/14 Current Economic Position and Prospects of the Republic of Korea, IBRD, February 20, 1974; Vol. II, Table 2.7.

/15 Korea: Prior estimates were derived from: (1966-1970 and 1970-1972) Current Economic Position and Prospects of the Republic of Korea, op. cit., Vol. I, p. 45 and (1972-1976 and 1976-1981) Major Economic Indicators of the Korean Economy, op. cit., Tables I-2 and I-6. The priors were then adjusted to achieve consistency between Columns (1) - (3) (growth in output) and Column (45) (gross investment)
Gwangju: The national ratios have been used, resulting in the estimates of gross investment shown in Column (45).

/16 The estimates for Gwangju are derived from the capital/output ratios in Columns (41) - (43) and the value added estimates in Columns (1) - (3). In estimating the percentages for Gwangju in Column (46) it has been assumed, for the sake of simplicity, that there are no interregional flows of capital.

/17 Estimates for 1970-72 have been made by assuming that the ratio between the 1970-72 and 1966-70 growth rates are the same for Gwangju as for Korea as a whole.

/18 The same population growth rate has been assumed for 1970-72 as for 1966-70, and the same labor force participation and unemployment rates have been assumed for 1972 as for 1970.

/19 The same sectoral distribution of employment has been assumed for 1972 as for 1970.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Investment, Savings and Net Capital Flow 1966-1981 for Gwangju /1

	Local Investment, Actual: 1966, 1970 Required: 1972, 1976, 1981 (Alt. II) W Billion (1)	Local Savings		Net Capital Flow to Gwangju		
		% of Value Added /2 (2)	W Billion (3)	W Billion (4)	% of Total Savings in Gwangju (1966) and rest of Korea (1972-81) (5)	% of Required Investment Capital (6)
1966	19	13	25	-6	24.0	-
1970	38	17	38	0	0	-
1972	76	19	46	30	4.8	40
1976	146	24	90	56	5.1	38
1981	290	30	216	74	3.5	25

/1 Based on Table 1, with Development Alternative II for Gwangju.

/2 Based on an analysis of actual and projected national savings rates at the corresponding per capita income levels.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Regional Planning: National Land Development Plan 1972-81

1. The National Land Development Plan (1972-81) was formulated by the Ministry of Construction to guide the efficient use and management of national land. Eight planning regions were designated - Seoul, Taebeg, Daejeoun, Daegu, Jeongju, Busan, Gwangju and Jeju - and the UNDP was asked to assist in analyzing the development potential of the regions in a Regional Physical Planning Study. The UNDP-financed Study was carried out by the consultants OTAM-METRA. Phase I of the Study analyzed the existing distribution of human, economic and natural resources of the respective regions in terms of their potentialities and constraints. It further analyzed alternative physical planning schemes, proposing decentralization through the development of selected large regional metropolises and offering broad regional and urban planning guidelines. The Study's recommendations were incorporated in the National Land Development Plan, preparation of which was completed in June 1971.

2. The National Land Development Plan classified national land both by region and by land use. It established as basic objectives efficient land use and development, natural protection and conservation and amelioration of the living environment, and within this context set forth policies for the location of investments in transportation, communications, urban infrastructure, water resource development and agriculture and forestry. The Plan stressed the importance of achieving balanced development throughout the nation through the decentralization of population and dispersion of industries from metropolitan areas, the fostering of small and medium size local cities, and the systematic improvement and expansion of major social overhead capital facilities. While detailed investment plans were not constructed for each of the eight planning regions, basic guidelines for the development of the regions and for the preparation of supplemental regional plans were established. A brief statement of these guidelines for Gwangju region follows.

Gwangju Region Planning Guidelines

3. The planning guidelines for the development of Gwangju region between 1972 and 1981 were in five areas: land use, transportation and communication, city development and amelioration of living environment, industrial location, and national land conservation and water resources development. In each of the areas the present status was elaborated, and broad direction for

development stated. The basic planning direction was to establish Gwangju City (Naju and Mogpo as satellite cities) as a major development pole and Suncheon-Yeosu areas as a secondary development pole. Functionally, Gwangju City was to develop as a regional metropolis; Mogpo as a coastal industrial city and as the main base of the region for the development of isolated islands; Yeosu as a heavy chemical industrial city and an oil supply center to the southwest and other parts of the country; and, Suncheon as a transportation junction between Yeosu, Busan and Gwangju. The region was to have a dual function in agricultural and industrial production.

4. Transportation improvements were to be made in both the road network and port facilities. Road developments included construction of the Honam and South Coastal highways which would link the region to Seoul, Busan, and Daeju regions, and construction and improvements in interior and coastal secondary roads necessary to expanded marketing of fishery and agricultural products and promotion of industrial developments. Specific highway links were named. Port improvements were to be made at Yeosu and Mogpo to increase their cargo carrying capacities. It was expected that the ports would be handling about seven million tons of seagoing cargo in 1981 (compared to 931,475 tons in 1968) - an increase due in large part to industrial developments in Yeosu-Suncheon, Mogpo and Gwangju. Fishing ports were also to be developed.

5. Major emphasis was given in the guidelines for the region to the development of an industrial belt along the southeast coast. Heavy and chemical industries (oil refining, petrochemical, fertilizer, metals, machines, munitions) were to be developed in Yeosu and Suncheon areas. Urban oriented industries, such as machinery, processed foodstuffs and textiles, were to be developed in Gwangju and Naju areas. Plate glass, fishery processing, plywood, and textiles were to be developed in the Mogpo area.

6. The guidelines for city development were based on the functional assignment of the cities and an increase in urban population from 948,000 in 1960 to 2,648,000 in 1981. The need to upgrade and expand the supply of housing, and water supply and sewerage systems was established, and green-belt developments recommended to establish open recreational areas. Other guidelines were issued to ensure national land conservation including a broad river improvement plan, and an erosion control plan. Consideration was also given to water use plans for municipal water, agricultural water and industrial water. Less emphasis was attributed to these areas, however, than to the development of industry and transport in the region.

7. The guidelines for development of Gwangju set forth in the National Land Development Plan are being formulated into a comprehensive detailed investment program under Phase II of the UNDP Regional Physical Planning Study. The 18-month Study is being carried out by Robert Nathan and Associates, and is scheduled for completion in September 1975. The Gwangju regional development program is the first of the regional programs to be prepared.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Project Cost Estimate Tables

- Total Project Cost Summary Table
- Contingency Allowances
- Housing Sites and Services Subproject
- City Market Subproject
- Fishery Harbor Complex Subproject
- Access Roads Subproject

KOREA

SECONDARY CITIES REGIONAL PROJECT

Total Project Cost Summary Table

Code	Subproject Items and Components	In W Million: Civil Works	Equipment	Professional Services	Contingencies Physical	Contingencies Price	Land Acquisition /1	Project Cost: Local	Foreign	Total	(In US$000 Equivalent) /2 Project Cost: Local	Foreign	Total
1.	Housing Sites and Services												
	1.01 Yeosu	375.94	-	31.96	59.77	121.87	107.94	399.91	297.57	697.48	999.77	743.93	1,743.70
	1.02 Mogpo	474.36	-	40.32	75.42	153.77	55.76	411.20	388.43	799.63	1,028.00	971.08	1,999.08
	1.03 Gwangju	446.64	-	37.97	71.02	144.78	220.65	558.88	362.18	921.06	1,397.20	905.45	2,302.65
	Subtotal	1,296.94	-	110.25	206.21	420.42	384.35	1,369.99	1,048.18	2,418.17	3,424.97	2,620.46	6,045.43
2.	Suncheon City Market	279.85	-	25.19	44.49	121.44	23.28	263.13	231.12	494.25	657.83	577.80	1,235.63
3.	Yeosu Fishery Harbor Complex	2,490.55	440.00	327.24	470.35	1,002.50	130.17	2,386.47	2,474.34	4,860.81	5,966.18	6,185.84	12,152.02
4.	Access Roads												
	4.01 Yeosu	387.99	-	34.92	61.69	155.82	179.89	534.94	285.37	820.31	1,337.35	713.43	2,050.78
	4.02 Mogpo	416.96	-	37.53	66.29	131.17	54.48	367.09	339.34	706.43	917.72	848.35	1,766.07
	Subtotal	804.95	-	72.45	127.98	286.99	234.37	902.03	624.71	1,526.74	2,255.07	1,561.78	3,816.85
5.	Technical Assistance												
	5.01 Advisory Assistance and Regional Planning Studies	-	-	196.80	-	-	-	34.80	162.00	196.80	87.00	405.00	492.00
	5.02 Fishery Complex Management Assistance	-	-	168.00	-	-	-	74.80	93.20	168.00	187.00	233.00	420.00
	5.03 Action Program	-	-	134.40	-	-	-	57.60	76.80	134.40	144.00	192.00	336.00
	5.04 Feasibility Studies and Preparation of Selected Projects	-	-	200.80	-	-	-	110.80	90.00	200.80	277.00	225.00	502.00
	Subtotal	-	-	700.00	-	-	-	278.00	422.00	700.00	695.00	1,055.00	1,750.00
	Grand Total	4,872.29	440.00	1,235.13	849.03	1,831.35	772.17	5,199.62	4,800.35	9,999.97	12,999.05	12,000.88	24,999.93

/1 Not to be financed by the loan.

/2 W 400 = US$1.00.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Contingency Allowances
(In US$ Millions)

	Land Acquisition		Civil Works		Equipment		Professional Services		Total
	Local	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	
Allowances for Physical Increase (%)			15%		15%				
Allowances for Price Increase *									
Total Project Cost before Contingencies	1.93	-	5.98	6.20	0.24	0.86	1.60	1.49	18.30
Allowances for Physical Increase (US$ Millions)			0.98	0.96	0.04	0.14			2.12
Sub-total	1.93	-	6.96	7.16	0.28	1.00	1.60	1.49	20.42
Allowances for Price Increase (US$ Millions)			2.15	2.08	0.08	0.27			4.58
Total, including Contingencies	1.93	-	9.11	9.24	0.36	1.27	1.60	1.49	25.00

* Compounded annually on base construction costs, inclusive of physical contingencies, as follows:

	1974	1975	1976-80
(a) Civil Works =	18%	15%	12% p.a.
(b) Equipment =	14%	11%	7.5% p.a.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Subproject Cost Estimates

1. Housing Sites and Services Subproject

City	Code	Project Component	Costs in W Million				
			Off-Site	On-Site	Breakdown of Costs Local	Foreign	Total
YEOSU	1.01 -	Housing Sites and Services - (First Stage) (Gukdong Area)					
		1.01.1 - Land Acquisition 31,077 pyong & compensation /1	1.98	105.96	107.94	-	107.94
		1.01.2 - Sites and Services:					
		(a) Site Preparation (on-site only)	-	81.07	48.64	32.43	81.07
		(b) Roads	55.99	52.03	45.29	62.73	108.02
		(c) Water Supply	34.10	16.34	21.16	29.28	50.44
		(d) Drainage	47.96	37.95	44.59	41.32	85.91
		(e) Electricity	29.70	19.66	11.23	38.13	49.36
		(f) Green Area	-	1.14	0.63	0.51	1.14
		Subtotal of Civil Works	167.75	208.19	171.54	204.40	375.94
		1.01.3 - Professional Services:					
		(a) Preparation, Surveys, Detailed Engineering, etc.	-	-	9.40	-	9.40
		(b) Project Engineering Supervision	-	-	22.56	-	22.56
		Subtotal			31.96		31.96
		Subtotal before Contingencies (Excluding Land Cost)	-	-	203.50	204.40	407.90
		Contingencies					
		(1) Physical 15%	-	-	29.11	30.66	59.77
		(2) Price Escalation:	-	-			
		(Compounded annually on base construction costs & physical as follows: 1974 = 18%; 1975 = 15%; and 1976-80 = 12% p.a.)			59.36	62.51	121.87
		Subtotal	-	-	88.47	93.17	181.64
		Total Excluding Land Cost	-	-	291.97	297.57	589.54
		Total Including Land Cost	-	-	399.91	297.57	697.48

/1 Not financed out of the loan. Area indicated is total project development area for first stage.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Subproject Cost Estimates

1. Housing Sites and Services Subproject (Continued)

City	Code	Project Component	Costs in W Million				
			Off-Site	On-Site	Breakdown of Costs: Local	Breakdown of Costs: Foreign	Total
MOGPO	1.02 -	Housing Sites and Services - (First Stage) (Dongmyeongdong Area)					
		1.02.1 - Land Acquisition - 39,110 pyong /1	-	55.76	55.76	-	55.76
		1.02.2 - Sites and Services:					
		(a) Site Preparation	-	110.99	66.59	44.40	110.99
		(b) Roads	93.76	69.32	64.34	98.74	163.08
		(c) Water Supply	30.03	25.50	21.92	33.61	55.53
		(d) Drainage	36.74	42.00	38.84	39.90	78.74
		(e) Electricity	30.96	29.18	12.62	47.52	60.14
		(f) Green Area	-	0.98	0.54	0.44	0.98
		Subtotal	191.49	277.97	204.85	264.61	469.46
		1.02.3 - Community Facilities:					
		Small Health Clinic	-	4.90	2.70	2.20	4.90
		Subtotal of Civil Works	191.49	282.87	207.55	266.81	474.36
		1.02.4 - Professional Services:					
		(a) Preparation, Surveys, Detailed Engineering, etc.	-	-	11.86	-	11.86
		(b) Project Engineering Supervision	-	-	28.46	-	28.46
		Subtotal	-	-	40.32	-	40.32
		Subtotal before Contingencies (Excluding Land Cost)	-	-	247.87	266.81	514.68
		Contingencies					
		(1) Physical 15%	-	-	35.40	40.02	75.42
		(2) Price Escalation: (Compounded annually on base construction costs & physical as follows: 1974 = 18%; 1975 = 15%; and 1976-80 = 12% p.a.)	-	-	72.17	81.60	153.77
		Subtotal	-	-	107.57	121.62	229.19
		Total Excluding Land Cost	-	-	355.44	388.43	743.87
		Total Including Land Cost	-	-	411.20	388.43	799.63

/1 Not financed out of the loan. Area indicated is total project development area in first stage.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Sub-Project Cost Estimates

1. Housing Sites and Services Sub-Project (Continued)

City	Code	Project Component	Costs in W Million		Breakdown of Costs		
			Off-Site	On-Site	Local	Foreign	Total
GWANGJU	1.03 -	Housing Sites and Services - (First Stage) - (Weolsandong Area)					
	1.03.1 -	Land Acquisition 41,808 Pyong & Compensation /1	-	220.65	220.65	-	220.65
	1.03.2 -	Sites and Services:					
		(a) Stream Side Improvement	68.97	-	24.99	43.98	68.97
		(b) Site Preparation	-	25.79	15.47	10.32	25.79
		(c) Roads	125.64	56.65	84.54	97.75	182.29
		(d) Water Supply	30.30	22.91	24.66	28.55	53.21
		(e) Drainage	-	54.65	31.76	22.89	54.65
		(f) Electricity	29.72	30.72	15.73	44.71	60.44
		(g) Green Area	-	1.29	0.71	0.58	1.29
		Sub-total of Civil Works	254.63	192.01	197.86	248.78	446.64
	1.03.3 -	Professional Services:					
		(a) Preparation, Surveys, Detailed Engineering, etc.	-	-	11.17	-	11.17
		(b) Project Engineering Supervision	-	-	26.80	-	26.80
		Sub-total			37.97		37.97
		Sub-total before Contingencies (excluding land cost)	-	-	235.83	248.78	484.61
		Contingencies					
		(1) Physical 15%	-	-	33.70	37.32	71.02
		(2) Price Escalation: (Compounded annually on base costs and physical as follows: 1974 = 18%; 1975 = 15%; 1976-80 = 12% p.a.)	-	-	68.70	76.08	144.78
		Sub-total	-	-	102.40	113.40	215.80
		Total Excluding Land Cost	-	-	338.23	362.18	700.41
		Total Including Land Cost	-	-	558.88	362.18	921.06

/1 Not financed out of the loan. Area indicated is total project development area for first stage.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cost Estimates

2. City Market Subproject

City	Code	Subproject	Costs in W Million				
			Off-Site	On-Site	Breakdown of Costs: Local	Foreign	Total
SUNCHEON	2	City Market					
	2.1 -	Land Acquisition - 10,028.7 Py and Compensation /1	1.29	21.99	23.28	-	23.28
	2.2 -	Civil Works - Infrastructure:					
		(a) Site Preparation - Earthworks	-	11.83	6.51	5.32	11.83
		(b) Concrete Paving	-	39.32	23.59	15.73	39.32
		(c) Roads	5.25	-	2.36	2.89	5.25
		(d) Water Supply	1.70	1.00	1.21	1.49	2.70
		(e) Drainage	1.18	7.22	3.78	4.62	8.40
		(f) Electricity	6.01	10.70	4.18	12.53	16.71
		Sub-total	14.14	70.07	41.63	42.58	84.21
	2.3 -	Civil Works - Buildings:					
		(a) Market Buildings (3 units for a total floor space of 1,255.4 Py)	-	165.71	74.57	91.14	165.71
		(b) Open Shelter for Fresh Produce Stalls (1 unit of 498.9 Py)	-	29.93	14.97	14.96	29.93
		Sub-total	-	195.64	89.54	106.10	195.64
		Sub-total of Civil Works	14.14	265.71	131.17	148.68	279.85
	2.4 -	Professional Services:					
		(a) Preparation, Surveys, Detailed Engineering, etc.	-	-	8.40	-	8.40
		(b) Project Engineering Supervision	-	-	16.79	-	16.79
		Sub-total	-	-	25.19	-	25.19
		Direct Cost before Contingencies (excluding land cost)	-	-	156.36	148.68	305.04
		Contingencies:					
		(1) Physical 15%	-	-	22.19	22.30	44.49
		(2). Price Escalation (Compounded annually on base construction costs and physical as follows: 1974 = 18%; 1975 = 15%; and 1976-80 = 12% p.a.)	-	-	61.30	60.14	121.44
		Sub-total	-	-	83.49	82.44	165.93
		Project Cost with Contingencies (excluding land cost)	-	-	239.85	231.12	470.97
		Project Cost with Contingencies (including land cost)	-	-	263.13	231.12	494.25

/1 Not financed out of the loan.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cost Estimates

3. Fishery Harbor Complex Subproject

City	Code	Project Component	Costs in W Million — Breakdown of Costs: Local	Foreign	Total
YEOSU	3.	Fishery Harbor Complex (First Stage)			
	3.01 -	Land Acquisition (65,130 Py) and compensation /1	130.17	-	130.17
	3.02 -	Fishery Industrial Zone Development (37,860 Py)			
		(a) Roads	29.46	36.00	65.46
		(b) Water Supply	1.13	1.39	2.52
		(c) Drainage	6.61	8.08	14.69
		(d) Electricity	0.96	2.90	3.86
		Sub-total	38.16	48.37	86.53
	3.03 -	Fishery Harbor Zone Development			
		Civil Works:			
		(a) Earthworks and dredging	154.43	126.35	280.78
		(b) Roadways, bridges and paved areas	72.91	66.37	139.28
		(c) Quays (820 m), jetties (240 m), revetment (275 m), fenders and bollards	770.32	581.12	1,351.44
		(d) Fish auction market, chill room, display hall, fish brokers' offices, etc. (1,552 Py)	122.77	150.05	272.82
		(e) Ice plant and ice storage (254 Py)	25.15	30.73	55.88
		(f) Freezing and frozen storage (414 Py)	32.37	39.57	71.94
		(g) Fuel supply facilities, including relocation	12.00	18.00	30.00
		(h) Public utility services (water, drainage and electricity)	44.94	101.26	146.20
		(i) Office buildings (port office, fishery cooperative, etc.) (348 Py)	25.05	30.63	55.68
		Equipment:			
		(j) Machinery and equipment for Ice Plant, frozen storage, etc.	71.34	285.37	356.71
		(k) Port operational plant and equipment	15.01	35.02	50.03
		(l) Port maintenance plant and equipment	7.53	17.51	25.04
		(m) Port navigational aids and beacons	4.11	4.11	8.22
		Sub-total	1,357.93	1,486.09	2,844.02
	3.04 -	Consulting Engineering Services			
		(a) Site investigations, surveys, design preparation and detailed engineering to contract award stage	48.84	73.26	122.10
		(b) Construction supervision	103.41	101.73	205.14
		Sub-total	152.25	174.99	327.24
	Contingencies				
	(1) Physical 15%		224.92	245.43	470.35
	(2) Price Escalation (compounded annually on base construction costs and physical as follows:)				
		1974 1975 1976-80			
	(a) Civil Works =	18% 15% 12% p.a.			
	(b) Equipment =	14% 11% 7.5% p.a.	483.04	519.46	1,002.50
		Sub-total	707.96	764.89	1,472.85
		Total Excluding Land Cost	2,256.30	2,474.34	4,730.64
		Total Including Land Cost	2,386.47	2,474.34	4,860.81

/1 Not financed out of the loan.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cost Estimates

4. Access Roads Subproject

City	Code	Project Component	Costs in W Millions		
			Local	Foreign	Total
YEOSU	4 -	Access Roads			
	4.01 -	Access Roads in Yeosu			
	4.01.1 -	Seogyodong-Orimdong Access Road (1.72 km)			
		(1) Right-of-Way Land Acquisition (9,656 py) and Compensation /1	61.32	-	61.32
		(2) Civil Works:			
		(a) Earthworks (clearing, excavation, filling, compaction, handling hauling, and seeding)	6.34	9.51	15.85
		(b) Pavement (7 m) (sub-base = 30 cm; prime coat, black base = 10 cm; tack coat, wearing surface = ASCON 5 cm)	12.37	15.07	27.44
		(c) Drainage and slope protection	11.98	3.00	14.98
		(d) Culvert pipes (60 cm ϕ = 66 m, 80 cm ϕ = 1,306 m, 100 cm ϕ = 45 m, pipeheads and attendant catch pits)	10.62	5.72	16.34
		(e) Concrete block sidewalks	2.85	5.30	8.15
		(f) Bridges (3 Nos.)	89.49	89.49	178.98
		Subtotal for 4.01.1 (excluding land cost)	133.65	128.09	261.74
	4.01.2 -	Fishery Complex Access Road (1.76 km)			
		(1) Right-of-Way Land Acquisition (3,730 py) and Compensation Costs /1	118.57	-	118.57
		(2) Civil Works:			
		(a) Earthworks (clearing, excavation, filling, compaction, handling hauling, and seeding)	5.91	8.87	14.78
		(b) Pavement (7 m) (sub-base = 30 cm; prime coat, black base = 10 cm; tack coat, wearing surface = ASCON 5 cm)	13.33	16.28	29.61
		(c) Drainage and slope protection	9.82	2.46	12.28
		(d) Culverts and drainage pipes	30.94	16.66	47.60
		(e) Concrete block sidewalks	7.69	14.29	21.98
		Subtotal for 4.01.2 (excluding land cost)	67.69	58.56	126.25
		Cost of Civil Works (excluding land cost)	201.34	186.65	387.99
		Cost of Land Acquisition and Compensation for Rights-of-Way	179.89	-	179.89
	4.01.3 -	Professional Services:			
		(a) Preparation, surveys, detailed engineering, etc.	11.64	-	11.64
		(b) Project engineering supervision	23.28		23.28
		Subtotal	34.92	-	34.92
		Subtotal before contingencies (excluding land costs)	236.26	186.65	422.91
Contingencies					
(1) Physical 15%			33.69	28.00	61.69
(2) Price Escalation (compounded annually on base construction costs and physical as follows: 1974 = 18%; 1975 = 15%; 1976-80 = 12% p.a.)			85.10	70.72	155.82
		Subtotal	118.79	98.72	217.51
		Total (Excluding Land Costs)	355.05	285.37	640.42
		Total (Including Land Costs)	534.94	285.37	820.31

/1 Not financed out of the loan.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cost Estimates

4. Access Roads Subproject (Continued)

City	Code	Project Component	Costs in Won Millions		
			Local	Foreign	Total
MOGPO	4.02	Access Roads (3.126 km)			
	4.02.1 -	Right-of-Way Land Acquisition (9,119 Py) and Compensation for houses (16 houses) 1/	54.48	-	54.48
	4.02.2 -	Civil Works:			
		(a) Earthworks (excavation, filling, compaction, handling, hauling and seeding)	62.63	93.94	156.57
		(b) Pavement (first stage width = 7 m) Sub-base = 30 cm; prime coat, black base = 10 cm; tack coat, wearing surface = ASCON 5 cm)	25.05	30.61	55.66
		(c) Drainage and slope protection -			
		(1) crest, toe and side ditches (2,197 m)	1.03	0.26	1.29
		(2) concrete block slope protection	0.44	0.10	0.54
		(d) Culverts -			
		(1) R.C. drainage pipes (60, 80 and 100 cm ϕ) and attendant works	2.14	1.15	3.29
		(2) Box culverts and attendant works	10.79	5.82	16.61
		(e) Bridges (2 No.)	35.64	35.64	71.28
		(f) Treatment of weak layers with gravel and sand	44.69	67.03	111.72
		Sub-total of Civil Works	182.41	234.55	416.96
	4.02.3 -	Professional Services:			
		(a) Preparation, surveys, detailed engineering, etc.	12.51	-	12.51
		(b) Project engineering supervision	25.02	-	25.02
		Sub-total	37.53	-	37.53
		Sub-total before contingencies (excluding land costs)	219.94	234.55	454.49
	Contingencies				
	(1)	Physical 15%	31.11	35.18	66.29
	(2)	Price Escalation (Compounded annually on base construction costs and physical as follows: 1974 = 18%; 1975 = 15%; 1976-80 = 12% p.a.)	61.56	69.61	131.17
		Sub-total	92.67	104.79	197.46
		Total Excluding Land Costs	312.61	339.34	651.95
		Total Including Land Costs	367.09	339.34	706.43

1/ Not financed out of the loan.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

The Housing Sector

Housing Needs

1. In the Long Term Perspective Plan (1973-81) the Economic Planning Board identifies a shortage in housing of 1.2 million units based on the number of households sharing housing units.[1/] The Government plans to reduce the housing shortage of 0.7 million units by 1981, although the long-term capital outlay projected for housing is too limited for the housing program targets:

Table 1

Indicators for Housing Supply Program

	1970	1976	1981
Population (000's)	31,317	34,345	36,709
Rate of Population increase	1.8%	1.5%	1.3%
No. of members of household /a	5.42	5.41	5.21
No. of Households (000's)	5,774	6,349	7,047
No. of Housing Units (000's)	4,493	4,993	6,265
No. of Housing Units constructed (000's)	115	260	338
Estimated Deficit (000')	1,236	1,356	782
Housing Deficit as a percentage of households	22.2	20.8	10.4

/a The average number of persons per housing unit is higher (6.97 in 1970) than the average number of members per household, indicating shared houshold occupancy.

Source: Status of Housing, Ministry of Construction 1973.

1/ A household is defined in the 1970 Census of Population and Housing as a group of persons who make common provision for food or other services for living.

2. While measuring the housing shortage by the incidence of multiple household units is a distinct value judgment, the high percentage (22.2%) of households sharing units bring into relief problems of high housing costs and obvious housing shortages. Shared occupancy is more extreme in urban areas indicating a greater shortage of housing in the cities. A 1970 Census of Population and Housing shows that in the cities 27% of all housing units are shared by two households, 4% by three, and 7% by four or more households. 1/ The average number of persons per housing unit is 8.8 in the cities (compared to an average of 6.6 for the nation).

3. Urban crowding in housing is more prevalent among the low-income groups, about half of whom are renters. No data differentiates housing demand by household income, but a 1972 survey of family income and expenditure shows that one-third of all urban families, have monthly incomes of less than W 38,000 (US$95); 2/ financial arrangements for housing and housing costs for these families are a burden. Typically, the costs (1972 and 1973) involved for public housing are:

	Py	M^2	W Million	US$	Average Cost
Land	50	165	1.0	2,500	W 20,000 per py
House Construction	20	66	1.6	4,000	W 70,000 per py
Total Cost			2.6	6,500	

Under existing housing programs, loans can be obtained for up to 50% of the cost of house construction; no financing is available for land. Consequently, to afford the public housing unit described above, a family must be able to invest W 1.8 million (US$4,500) outright, and make monthly mortgage payments on a W 0.8 million (US$2,000) loan.

4. Rental units are scarce (4% of total housing units in 1970) and expensive. Approximately 90% of all rentals require a very large rental deposit that excludes families without substantial savings or moderate incomes. Most houses are owner-occupied and a portion of the house is rented to defray housing costs.

Housing Supply

5. National housing production of 866,000 units between 1962 and 1971 has been only two-thirds of household formation. Eighty-four percent of the

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1/ Thirteen percent of all households nationwide are shared by two households, 4% by three, and 3% by four or more households.

2/ Fifty-five percent of the urban families were considered middle-income (W 35,500-75,000) and 11% high-income.

units were produced by the private sector for middle and upper income groups; public housing programs provided only 143,000 housing units.

6. In the First (1963-68) and Second (1968-72) Five-Year Economic Plans, the Government placed priority for investment on industrial expansion; national savings were insufficient to provide for private housing on a large scale. In 1973, a Housing Construction Promotion Law was enacted to stimulate the generation of funds for public housing. The law provides for the raising of national housing funds through the compulsory purchase of national housing bonds (at 6% interest, 5-year redemption) by those seeking business licenses, in addition to the more traditional ways of obtaining funds through housing lotteries, housing debentures, governmental budgetary loans and foreign loans. In the first year, the Korea Housing Bank, charged with administering the national housing fund, raised W 8 billion (US$20 million) through housing bonds (see Table 3). It plans to double sales of housing bonds in 1974, making bonds the prime source of capital for public housing.

7. Housing supply, however, will continue to remain scarce under current investment plans. Planned national investment (including W 235 billion from housing bonds) in housing between 1973 and 1981 is only W 1.318 billion (US$3.3 billion) or less than half of the amount required to support the Ministry of Construction's program for the supply of 2.5 million new houses. The Economic Planning Board's housing investment estimates contained in the Long Term Perspective Plan are as follows:

Table 2

Housing Sector Estimates 1973-1981

Period	Housing Investment (W billion)	% of Total Capital Investment
1973-1981	1,318 /a	9.8
1973-1976	426	10.4
1977-1981	892	9.5

/a W 197 billion public investment and W 1,120 billion private investment (established sources W 235 billion from housing bonds, W 17 billion from lottery, W 145 billion from Korea Housing Bank, and W 723 billion from other unspecified sources).

Source: Major Economic Indicators of the Korean Economy 1973-1981, Economic Planning Board, June 1973.

The investment planned is 65% more than the investment expended on housing between 1962 and 1971 but the annual average number of houses constructed then was 87,000 compared to a planned annual construction of 250,000. The estimate of planned investment is based on an unrealistic housing unit cost of W 500,000 (US$1,250) and does not include infrastructure or other site development costs. The related housing costs, for which no financing is available, are a major constraint for private and public developers; developers are unable to assemble large enough parcels of land and prepare sites at modest enough prices for large scale housing construction. Under authority of the Land Expropriation and Planning Law, the Government can delineate areas for public housing development and freeze the prices of land to be acquired. This authority could faciliate housing delivery if used more frequently and expanded to provide for public financial support for land purchase and site development.

8. Eighty-five percent of the total housing investment planned for 1973-81 is to be generated from the private sector, but the means of mobilizing private resources are largely unspecified. The investment gap (W 723 billion as shown in Table 2) illustrates the need to stimulate private savings through the institution of savings and loan associations and to concentrate on increasing private sector involvement.

Public Housing Sponsors

9. The Korea Housing Bank (KHB) is the only long-term mortgage lending institution in Korea. It was established in 1967 as a public corporation under the supervision of the Ministry of Finance to raise funds for housing construction loans to middle- and low-income families. The source of funds for KHB, which as noted earlier, is entrusted by law with the National Housing Fund, is as follows:

Table 3

Source of Funds Korea Housing Bank (%)

	1971	1972	1973 (10 months)
Deposits	41.6	47.6	38.4
National Housing Fund:			
Bond and Debentures	25.1	22.8	42.1
Borrowings	21.6	9.8	6.9
Lotteries	3.5	3.8	4.6
Other	5.9	14.2	1.6
Sale of Stock	2.1	1.6	-
Earnings	.2	.2	6.3
	100.0	100.0	100.0

10. KHB lends for both public housing and private housing construction, but the bulk (about 70% in the last three years) of its loans are for private housing. The terms of lending in the two categories differ, and are tied to the different sources of funds. The maximum loan available covers 50% of housing construction costs, and the terms on loans for private housing are 14% interest for a 20-year term and on public housing 8% interest for a 15-year term. KHB funds are available only for low- and middle-income groups and for the construction of houses no larger than 25 pyong (82.5 m^2). Loan recipients tend to be middle-income families (W 50,000 per month) (see para 3). Upper-income groups generally make outright cash purchases as commercial bank lending is limited to a term of 1-3 years and interest is 15.5%. Public housing construction is carried out by the Korea Housing Corporation and by municipal and provincial governments.

11. The Korea Housing Corporation (KHC) was established in 1962 as a semi-autonomous agency of the MOC to execute middle- and low-income housing projects by providing management services, technical training and operation of housing sites. The Corporation contracts out the actual construction of housing units and related community facilities, but provides supervision and engineering services. KHC uses standard housing plans and maintains a housing research unit on improvement and production of building materials.

12. KHC undertakes a variety of housing programs only one of which is specifically aimed at low-income groups. It supervises the construction of housing units for government employees, foreigners and military personnel, and manages rental units as well as sales units. In general the units have been of three types: (i) lease-purchase single family houses 43 m^2 in size and costing US$3,600 per unit (1970) plus land; (ii) condominium apartments 43-66 m^2 in size and costing US$8,140-10,800; and (iii) condominium apartments 86-198 m^2 in size and costing up to US$35,000.

13. KHB construction loans (administered by KHC) have been available for low- and middle-income groups. Upper-income groups have been required to make cash purchases of apartment units.

14. In addition to its general housing programs, KHC has undertaken one sites and services program as part of a larger low-cost housing development at Kai Bong outside of Seoul. The housing plots ranged in size from 165 m^2 to 330 m^2 each, and sold for US$3,750 to 7,500 (W 1.5 to 3 million). KHB financing was not available for the serviced plot and for only a portion of the housing construction. As a result the sites and services program was as costly as other public housing programs, particularly as most housing construction was contracted out.

15. Although an increasingly large portion of KHC operations is directed at low-income households (over 50% of the housing units constructed in 1973, and over 90%--10,600 out of 11,475 units--to be constructed in 1974) the major beneficiaries have been middle- to high-income households.

As noted earlier, housing costs are high; 72.6 m^2 apartments completed in Seoul under an AID guaranty program in 1972 cost US$9,000 a unit. In 1974, AID approved a second housing investment guaranty program consisting of a US$15 million loan for the construction of 46.2 m^2 apartments at cost of US$5,000-8,000 each.

16. KHC has undertaken rental apartments as well as sales apartments as part of its effort to provide housing for low-income groups. In order to provide cheap rentals (charged at 3% of the construction costs) KHC has received government subsidy.

17. KHC has not yet extended its construction program beyond Seoul, Busan and other large cities of Korea. Public housing in most cities is very limited and administered by the municipalities.

Local Governments

18. Provincial and municipal governments are severely limited by shortages in both funds and technical expertise for public housing. Between 1962 and 1971, local governments have been responsible for the construction of 26,000 houses or 4% of the total number of houses constructed. Most of these houses have been funded under a disaster relief program administered by the Ministry of Home Affairs.

19. The cities are eligible to receive KHB support for public housing programs, although KHB lending outside of the larger cities of Korea has been modest. Even where KHB lending has been available through branch banks, lending has been minimal. In Gwangju City, for example, about 900 public housing units have been constructed since 1969 (and 16,000 private units). This compares to an estimated housing demand of roughly 47,000. 1/ KHB has estimated that the total demand for public housing in Gwangju region will be 200,000 units by 1981. KHB lending in the region for 1974, however, is anticipated to provide only 400 public housing units.

20. The cities have been generally unsuccessful in providing public housing to low-income groups despite certain experimental efforts to reduce housing costs. In 1968, the municipal government of Seoul constructed Citizens Apartments for sale to squatters. The apartments (3,100 units constructed between 1968 and 1970) were 36 m^2 in size, and consisted of two rooms, one water tap, and a shared (among ten units) sanitary facility. The cost of the units was US$1,000; an additional cost of US$700 was required for the finish of the interior and a pro-rata share of the common sanitary facility. The city subsidized up to one-third of the apartment cost, and provided financing at 8% over 15 years for the balance. The apartment

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1/ The housing demand is based on the number of households that share occupancy of a housing unit.

program failed mainly as a result of the poor construction of the apartments which became quickly converted into slums and the collapse of one building. In addition, about half of the units were leased or sold to others and one-third of the occupants were in arrears on their payments. The experience of other cities in providing frame apartments has been less dramatic, yet disappointing. The result has been to direct most municipal housing programs towards higher income groups.

21. The cities have financed to a certain extent their housing programs by speculating on land. Under the Land Readjustment Law, the cities have been able to acquire land for public housing, provide the total land area with urban infrastructure, and sell off housing lots at market prices. The urbanized land, however, tends to be too expensive for low-income households to purchase.

Housing Policy

22. The 1973 Housing Construction Promotion Law established a Housing Policy Council 1/ to prepare policies and plans and allocate funds for the short and long-term supply of housing; the Agency for International Development is assisting the operation of the Council as part of its recent housing investment guaranty project in Korea (see para 15). 2/ A housing policy is required that defines real housing needs among all income groups, that guides housing supply programs and integrates the supply programs with national economic plans. Further, the role of the public and private sector in supply of housing needs clarification and a strategy developed to coordinate and facilitate their respective involvements.

23. The Government intends to issue a housing policy by 1975 which takes into consideration the main constraints on housing production. The Bank will contribute to the formulation of a comprehensive housing policy through its attention in the proposed project to low-cost housing construction and to the demand for housing among low-income groups. The experience of housing sites and services in Gwangju's secondary cities will be evaluated under the project as one of several approaches to solution of the housing problems.

1/ The Housing Policy Council chaired by the Vice-Minister for Construction includes representatives from the Korea Housing Corporation, the Korea Housing Bank, the Economic Planning Board, the Ministry of Finance, the Ministry of Home Affairs, the Ministry of Economic Affairs, and two representatives from the private sector.

2/ AID potential role in the housing policy development is outlined in "Report on the Mission to Korea, November 6-11, 1973" Alfred P. Van Huyck, PADCO, Inc.

KOREA

APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Housing Sites and Services -- Site Planning and Design Standards

A. Site Planning

Site Selection

1. In each of the three cities of Yeosu, Mogpo, and Gwangju, a number of sites were examined and evaluated before a choice for the project site was made. Details of sites examined, leading to selection of a suitable site are as follows:

Yeosu

2. Two sites were investigated: the first site is located in the Sinweol Dong area (site of the old airport), about 5 km west of downtown Yeosu. The second site, Gukdong, lies north and adjacent to the proposed fishery harbor complex, and about 2.5 km west of downtown Yeosu. The latter site is not only accessible, but has a number of features (availability of community facilities, basic infrastructure, etc.) which makes it a good choice as a first stage project that can be replicated and expanded. For the future, however, the Government is also considering a site in the congested and limited area where the old port is located. But this will probably be developed for high density (apartment) dwellings. The Gukdong site selected in Yeosu is technically a better site for housing development although it requires terracing.

Mogpo

3. Two sites were investigated: one in the Bughang area near the North Port and the other, the Dongmyeongdong area, 1 km east of downtown Mogpo. The Bughang area is often flooded, has poor soil conditions and presently has no access to the site. The cost for infrastructure services including off-site infrastructure would be higher than that of the Dongmyeongdong area. Furthermore, it is being zoned for future industrial use. The Dongmyeongdong area, therefore, has been selected.

Gwangju

4. Three sites were investigated: the Sinandong area, the Gwangcheon-dong area, and the Weolsandong area. The following is a rating of each of the three sites:

Site Considerations	Sinandong Area	Gwangcheondong	Weolsandong
Land Price	W 20,000/py	W 12,000/py	W 8,000/py
Off-Site Infrastructure :			
Roads	No access exists	Good access	Excellent (The Sunwhandoro main road runs alongside the area)
Existing Water Supply Source	2 km from existing water mains	2.5 km from existing water mains	0.5 km from existing water mains
Electric Transmission	1 km from existing transmission lines	0.8 km from existing transmission lines	adjacent existing transmission lines run along the Sunwhandoro main road
Transportation Linkage	Good	No lines	Excellent
Soil Conditions	Good	Swampy	Good
Terrain	Good	Sloped	Good
Storm Drainage	Bad	Good	Excellent (Geuglagcheon stream)
Other Factors	Many dwelling units exist	Many dwelling units exist	Almost totally vacant land

The Weolsandong area was, therefore, chosen as the selected project site.

Project Sites

5. The three housing sites and services project components form in each of the three cities the first stage of the long-term development of a larger area. The total area to be developed in each city is about 240,000 py (79 ha) in Yeosu; 390,000 py (129 ha) in Mogpo; and 200,000 py (66 ha) in Gwangju. Out of this, the project components cover 31,077 py (10.3 ha); 39,110 py (12.9 ha); and 41,808 py (13.8 ha) respectively.

Site Characteristics

6. The following table gives the physical characteristics of the sites selected for the first stage of development:

City	Yeosu	Mogpo	Gwangju
Site	Gukdong Site	Dongmyeongdong Site	Weolsandong Site
1. Location	About 2 km west from city center, very close to the proposed Yeosu fishery harbor complex; closest area to existing municipal services and employment.	About 1 km southeast from city center, close to harbor and industrial area of Samhagdo; closest to existing municipal services and employment.	About 2.5 km southwest from city center; closest to existing municipal services, primary schools, public transportation and infrastructure.
2. Area	10.3 ha	12.9 ha	13.8 ha
3. Terrain	Excellent sea view, minimum foliage cover, but sloped slightly (12%) requires terracing, cutting and filling. Well drained.	Excellent level and well drained. Some back flow in case of high tides. Land is a very large, vacant area (12.9 ha) already reserved for residential use. Reclaimed 9 years ago (1964). Filling required.	Excellent, generally flat, gently sloping towards the Gueglagcheon stream (15 m wide). Well drained.
4. Transportation Linkage	Bus line serves site every 15 minutes along the access road to Gukdong from the western edge of the city to the downtown area.	Bus line serves site every 15 minutes along the access road to Samhagdo port area linking downtown.	Bus line serves site every 10 minutes along Sunwhandoro road through Gwangnamro road to downtown.

	Yeosu	Mogpo	Gwangju
5. Employment Linkage	Site is within 600 m from the proposed fishery harbor complex.	Mogpo fishery harbor is located just across the access road to Samhagdo. Project access road component will link site to industrial estate.	The Asia Motor Co., small and medium industries located 3 km away. Bus travel = 8 minutes.
6. Off-Site Infrastructure			
(a) Roads	Excellent road access. Road from Suncheon will be directly linked with the proposed Seogyodong-Orimdong access road, and fishery complex arterial road.	Main access from downtown along the harbor side.	Excellent road access, linking with the Gwangnamro from downtown.
(b) Water Supply	A 300 mm dia. water main is buried along the major access road, having good water pressure varying from 3 to 4.5 kg/cm^2. A booster pump station is required to pump up the water into a storage tank. Current construction plans will boost quantity and quality of water supply to Yeosu by end 1975.	Existing main along the access road to Samhagdo is 300 mm Ø with water pressure varying from +3.0 to 3.5 kg/cm^2. Augmentation of water supply from new dam under construction, and planned improvements in city distribution system by end 1976 will increase both quantity and water pressure to project site.	Existing main is about 500 m away, where a 400 mm Ø exists, with water pressure varying from 3.0 to 3.5 kg/cm^2.
(c) Drainage	Existing open drain along the proposed major on-site road (west side of proposed site) should be improved.	Existing open drain from the west to the east of site should be improved to the existing detention basin.	Nearby stream acts as collector of storm water drainage.
(d) Electricity	Existing transmission line lies along the major access road.	Existing transmission line lies adjacent to and south of the proposed site.	Existing transmission line lies parallel and along Sunwhandoro road running adjacent to site.

Site Planning Criteria

7. The criteria used in planning sites and services areas can be divided into socioeconomic and engineering criteria. Socioeconomic criteria include:

(a) adequate land use planning for housing, community facilities, and circulation areas; in terms of access, safety, and social interaction at minimum costs;

(b) availability of adequate community facilities, i.e., schools, clinics, community centers, markets, day care centers, etc.;

(c) grouping of these facilities in such a way as to form an attractive and viable nucleus for community activities, permitting multiple use of building and play areas;

(d) a safe and convenient system of pedestrian circulation linking lots to public transport, play areas and community facilities;

(e) vehicular circulation within the areas allowing access to residential lots, commercial and public areas and providing easy flow of traffic while protecting the neighborhoods from through traffic;

(f) availability of municipal servicing areas and garbage pick-up facilities; and

(g) lot layouts designed to reflect local social preferences and life styles, limiting traffic noise, industrial pollution and obnoxious odors.

Engineering criteria include:

(a) optimum physical planning complying to desirable ranges of population density and land use percentages for circulation, public and private areas, and lot coverage;

(b) adequate provision of basic services, roads, footpaths, storm water drainage, water supply, fire hydrants, sewage disposal, power supply and security lighting;

(c) flexibility in the design of the physical layout and basic services to permit and provide for future extensions and improvements as household needs and incomes change.

Planning Standards

8. Based on the above criteria, the following planning standards have been adopted in developing site plans for the proposed sites and services project components:

(a) the gross housing density (number of plots/entire area in ha) is about 55;

(b) land use ratios (percentage of the different uses for the entire area) are as follows:

(i) residential use (varying between) 70-80%

(ii) community facilities 2-5%

(iii) green areas - (playgrounds or parks) 2-5%

(iv) roads and footpaths 16-22%;

(c) three types of lot sizes are utilized: 35 py (116 m^2) 50 py (165 m^2) and 70 py (231 m^2);

(d) the percentage distribution of each lot size is as follows: 35 py lots 70%; 50 py lots 20%; and 70 py lots 10%;

(e) a block consists of 50 to 75 lots which is divided into two or three smaller blocks made up and varying between 20-25 lots.

Site Layout

9. The three housing sites are divided into plots of three sizes: 35 py (116 m^2), 50 py (165 m^2), and 70 py (231 m^2). The 116 m^2 lots will be reserved for low-income households, the 165 m^2 lots for middle-income households and the 231 m^2 lots for high-income households (see Table 1 for the estimated 1976 income distribution). The mix of different income groups would further the social development of the area. Past attempts in the secondary cities to build areas exclusively for low-income families have had undesirable social effects and such programs have now been discontinued.

10. The number of plots and the distribution of the area are as follows:

Number of Plots	Yeosu	Mogpo	Gwangju	Total
35 Py	395	475	495	1,365
50 Py	92	121	134	347
70 Py	53	56	72	181
Total	540	652	701	1,893
Absolute Distribution of Total Area (Pyong)				
35 Py Lots	13,825	16,625	17,325	47,775
50 Py Lots	4,600	6,050	6,700	17,350
70 Py Lots	3,710	3,920	5,040	12,670
Public Areas	8,942	12,515	12,743	34,200
Total	31,077	39,110	41,808	111,995
Relative Distribution of the Total Area (%)				
35 Py Lots	44.5	42.5	41.4	
50 Py Lots	14.8	15.5	16.0	
70 Py Lots	11.9	10.0	12.1	
Public Areas	28.8	32.0	30.5	
Total	100.0	100.0	100.0	

Site Preparation

11. Site preparation on the three housing sites involves clearing the sites of trees and vegetation, earthwork in excavation, hauling away from excavated areas to fill areas, leveling and compaction. In Mogpo, extensive earthfilling is required because of existing low ground levels. In Yeosu, the project area is on a hilly site necessitating terracing and protective masonry works to maximize the availability of lots. The Gwangju project site is bound by a stream on the south, necessitating bank revetment work to protect the project area in the vicinity of the stream from erosion.

B. Design Standards

Infrastructure

12. In designing the infrastructure, standards have been reduced to provide the minimum acceptable without sacrificing sound engineering and good practice, and thus reach the low-income households. A detailed analysis of the minimum requirements of the sites and services project components as well as MOC prevailing standards and anticipated requirements for future urban growth was considered.

(a) Off-Site Access and Circulation Roads

13. Off-site access roads, connecting the project sites to existing city roads, will be paved having a 20 cm thick compacted aggregate stone sub-base, an asphalt prime coat, a 15 cm thick base course, and an asphalt/aggregate wearing surface 5 cm thick. Side drainage gutters and gutter inlets will also be provided. The paved width varies from 7 m in Gwangju to 9 m in Mogpo. In Yeosu, a road-width reservation of 13 m is designed to allow for future widening.

14. Off-site circulation roads are provided for the Gwangju and Mogpo project sites. These roads facilitate entry and exit at different points along the peripheral boundary of the first stage development. In Gwangju, the road will be asphalt paved for a width of 7 m to the same standards as described in para 13. A reinforced concrete "slab deck design" bridge 20 m in length and 8 m in width is incorporated in the western section. In Mogpo, the circulation road is to be constructed in two sections: the southern section will be asphalt paved for a width of 8 m, to the same standards as para 13. The remainder will be an earth compacted road, unpaved for the first stage of development. In both Gwangju and Mogpo, since future expansions of the housing sites are envisaged in the future, the circulation roads will be absorbed and upgraded where necessary in future stages of planned development.

(b) On-Site Roads

15. Standards and specifications for the network of on-site roads are as follows:

(i) Main roads will serve as collector roads linking the off-site access and circulation roads to secondary roads, and will provide vehicular and pedestrian access to the residential blocks. The service width will vary between 7 m to 9 m, with surface water drainage gutters on either side. Construction comprises of a 5 cm asphalt wearing surface area laid on a 15 cm hardcore base course of selected aggregate stone carried on 20 cm treated sub-base of graded and compacted formation. The surface water drainage gutters are "L"-type concrete gutters. Unit cost for this road is estimated between W 12,478 (US$31) to W 28,627 (US$71.6) per linear meter.

(ii) Secondary roads will provide vehicular and pedestrian access to residential plots. They will also be used for emergency and service vehicles (fire trucks, ambulances, night-soil removal trucks, trash and garbage removal trucks, etc.). These roads will have a service width of 5 m, with surface water drainage gutters on either side. Construction specifications are the same

as main roads. Unit cost for this road is estimated to be W 18,634 (US$46.5) per linear meter.

(iii) Footpaths will provide major circulation for pedestrians and bicycles and will connect all lots with public areas and facilities. They will serve as cluster and plot entrances, and have a service width of 4 m bordered by concrete curbs on either side. Construction comprises a 6 cm concrete slab laid on 3 cm compacted sand fill bed. Unit cost for this road is estimated to be W 7,076 (US$17.7) per linear meter.

16. The approximate lengths of the different roads for each of the cities are given below in meters:

	Yeosu	Mogpo	Gwangju	Total	% of Total
Main Roads	916	848	268	2,032	16
Secondary Roads	933	1,803	1,339	4,075	32
Footpaths	1,955	1,618	3,209	6,782	52
Total	3,804	4,269	4,816	12,889	100

Water Supply

17. A brief description of the present water supply arrangements for each city is given below:

Yeosu currently obtains its raw water from an intake on the Eui Sa River near Suncheon. The intake is owned and operated by the Bureau of Industry. A pumping station with a capacity of 25,000 MTD, located at the intake, pumps raw water through a 22 km long 500/600 mm diameter transmission pipeline to the Hwang Yang industrial area north of Yeosu, and further to Yeosu City itself through a 450 mm diameter branch pipeline 12.5 km long. Two pumping stations in the branch system boost the raw water to a new rapid-gravity water treatment plant located near the city, and capable of producing 10,000 MTD. The water treatment plant is owned and operated by the City. The Bureau of Industry has currently commenced the first stage of construction for increasing the supply of industrial raw water for the future expanded needs of the Hwang Yang industrial area, and the city of Yeosu, from a new supply source, namely the Sumgin River. Work is expected to be completed by the end of 1975. When completed, the first stage will supply 100,000 MTD of raw water, of which 10,000 MTD has already been

earmarked for Yeosu. The city already has budgeted plans to absorb the augmented future supply, treatment and distribution. Technical assistance is being provided within the project to assist the City of Yeosu to effectively implement these improvements, among other items dealing with water supply.

Mogpo derives its water supply from an intake on the Yong San Gang River, located at Naju 29 km away. A rapid-gravity filtration plant located at the intake has a production capacity of 25,000 MTD, and the water is pumped through supply pipes to a service reservoir in Mogpo. Five local impoundments with slow sand filters supplement another 5,000 MTD to the Mogpo reservoir. The city of Mogpo has commenced construction of another source of water supply at Daedong Dam, 40 km north of the city. This source is anticipated to produce about 25,000 MTD by the end of 1976. The city already has budgeted plans to absorb the augmented future supply, treatment and distribution. Technical assistance is being provided within the project to assist the city of Mogpo effectively implement these improvements, among other items dealing with water supply .

Gwangju derives its water supply from two surface reservoirs, the Segok (with a capacity of 15,000 MTD and the Dongbok (with a capacity of 60,000 MTD). The water is treated at rapid gravity filtration plants near the city. However, the city experiences difficulty in water treatment, production, and distribution losses; and technical assistance is being provided within the project to assist the city of Gwangju overcome these difficulties, among other items dealing with water supply.

18. The water supply system for the three project components is designed for an initial per capita consumption of 150 liters per day, with individual metered connections to each house (the water rates are discussed in Annex 9). This is a modest design standard, consistent with the low overall water supply standards in the region. A gradual reduction over time is expected in the number of occupants per house, permitting the per capita consumption to increase correspondingly.

19. The off-site trunk water mains linking existing municipal supply to the project sites, and on-site distribution networks will consist of cast iron pipes, the former of 100 mm and 150 mm diameters, and the latter of 75 mm and 100 mm diameters. The on-site distribution system will follow the roads and footpath layout. Fire hydrants will be located at convenient points within the road network, with the maximum distance between any hydrant and plot not being more than 140 m. For the Yeosu project site, a water distribution tank and a booster pumping station will be required due to the hilly terrain. The lengths and diameters of the pipes included in the project are as given below:

	Trunk Water Mains Off-Site	Distribution Network On-Site
Yeosu	100 mm diameter, 180 m total length	75/100 mm diameters 3.65 km total length
Mogpo	150 mm diameter, 570 m total length	75/100 mm diameters 5.73 km total length
Gwangju	150 mm diameter, 480 m total length	75/100 mm diameters 5.28 km total length

20. Because of poor standards of management, operation and maintenance in the existing municipal systems, and the need to increase the water supply, an immediate work program and studies are required to ensure adequate water supply in the future. Technical assistance is included in the project for immediate works, feasibility studies and master plans (see Annex 7).

21. Disposal of Human Wastes. Presently, all three cities rely heavily on manual collection of the "night soil". Holding tanks and cesspools are also used to a large extent, particularly in Yeosu where suction trucks are used to transfer the sewage from tanks and pools to barges which are towed out to open sea for dumping. Gwangju has a small waterborne sewerage system, serving about 1% of the population.

22. The problems of human wastes disposal in the secondary cities will be studied under an action program, and technical assistance is included in the project for an immediate and long-range program which will include feasibility studies and master plans (see Annex 7).

23. For the first stage of development of the housing sites and services project components, it is proposed to utilize the existing system of individual holding tanks (or cesspools) to be built by lot owners when they build their houses. The municipalities will extend their scavenging truck services, until permanent solutions can be implemented. Costs for the disposal of human wastes at the project sites, therefore, is not included in the cost of the project.

Drainage

24. A brief description of the present drainage situation in each city is provided below:

Yeosu has a system of open drains and channels to convey both storm drainage and waste water into the sea. Because of the hilly terrain and small tides, there are no special drainage problems.

Mogpo is sited on hilly terrain surrounded by low-lying reclaimed areas which are subject to flooding. A drainage study has been made by a local consultant. Based on his recommendations, the city has done some work, especially in the reclaimed areas. The proposed housing site is on land reclaimed by dredging, behind a sea dyke. Waste water and storm drainage is now collected in a retarding basin, which also receives water drained from part of the downtown area. Pumps discharge the water collected into the sea. The size of the basin and pumps will require review by outside consultants to determine future adequacy for serving the housing sites (see Annex 7).

Gwangju currently has a system of open drains for rainfall and storm water. These drains convey the runoff to drainage channels discharging into the Gwangju River. Waste water and discharges from overflowing cesspools and septic tanks often find their way into the storm drains.

25. The drainage systems incorporated in the housing sites and services components are combined systems for storm water and domestic waste water (or sullage) disposal. The design criteria for surface water storm drainage is based upon 10-year storm intensity duration curves. Off-site drainage will utilize large open gutters and reinforced concrete box culverts of various sizes, together with reinforced concrete spun pipes of various diameters. On-site drainage network will run alongside and parallel to the road network. Inspection manholes are included, installed at suitable points, with surface water drainage let into the main interceptors through road drainage gutter inlets approximately 30 m apart. The following is a breakdown of reinforced concrete gutters, culverts, and spun pipe elements included in the drainage design:

	Off-Site Elements	On-Site Elements
Yeosu	(i) "U"-type gutters: 1.2m x 1.2m, 1.0m x 0.6m & 0.4m x 0.4m Sections for a total length of 467m.	(i) Box culvert 2.0m x 1.5m, 163m in length.
	(ii) 600mm Ø spun pipe, 183m length.	(ii) 600 mm Ø to 1,200mm Ø spun pipes, for a total length of 3.37 km.
Mogpo	450mm Ø spun pipe 208m long	250 mm Ø to 1,500mm Ø spun pipes for a total length of 5.29 km.
Gwangju	-None-	(i) Double-box culvert. 3m x 3m - 154m long.
		(ii) 250mm Ø to 450mm Ø spun pipes for a total length of 5.15km.

Electricity

26. The source of electricity for each city is as follows:

Yeosu — A new distribution line from the existing KECO substation will be installed. The off-site incoming line will be 3 phase, 3 wire, with a capacity of 3.3 KV.

Mogpo — KECO has a plan to increase the voltage of the existing distribution line from 3.3 KV to 22.9 KV by June 1975. The off-site incoming line will be installed on concrete poles up to the southern boundary of the public housing project area.

Gwangju — There is already an existing distribution line running along the Sunwhandoro road with a capacity of 6.6 KV which will be tapped for the project site.

27. Street lighting along the main and secondary roads, and along footpaths will be provided, together with metered connections to each lot.

Community Facilities

28. Due to the small size of the housing sites and services components and the central location of the sites, the need for community facilities is relatively small. All three sites are within walking distance of existing primary schools and shops. The following community facilities are included in the project:

Yeosu — Children's playgrounds in five locations within the project site (2,278 m^2).

Mogpo — Children's playgrounds in four locations within the project site (1,954 m^2); and a small health clinic (116 m^2). The health clinic will be designed to comply with existing regulations, and will be operated and maintained by Government.

Gwangju — Children's playgrounds in four locations within the project site (2,583 m^2).

Housing

29. Although funds for housing construction are not financed out of the loan, the appraisal mission has reviewed proposals for housing designs and cost estimates. The Housing Bureau in the Ministry of Construction has

prepared design plans for urban and rural dwelling units for a number of plot sizes from which potential occupants can select preferred floor designs. A typical low-cost housing design has a building area of 12.27 py (40.6 m^2) at a total cost (including 20% contingencies) of about W 605,139 (US$1,512). This type of housing can be afforded by households slightly above the 20th percentile of the income distribution curve and is below what is presently available to low-income households which range between W 1.5 to 2.0 million per dwelling unit.

30. The proposed low-income housing unit incorporates a number of self-help features which the occupant is expected to provide. This housing unit would have two bedrooms, one living room, one kitchen and one toilet. Several alternatives have been worked out for this type of housing which would allow a range of preferences for living arrangements. Portions of the house requiring skilled labor would be contractor-built. Unlike in other countries, housing units in Korea have to be finished and more substantial because of extreme weather conditions. Out of the total cost of W 605,139 (US$1,512) about 33% of the cost is directly attributable to the need for insulation and heating. The houses are designed initially to accommodate about eight persons. It is expected that the occupants would expand these units to 16 or 20 py (53 m^2 or 66 m^2) as their incomes increase. The average building area per capita is about 5.1 m^2. The corresponding figure for Calcutta in 1961 was 3.7 m^2 per person; for Manila in 1965, 5.8 m^2 per person; and Tokyo in 1970, 6.0 m^2 per person. For the middle and high-income groups expected to occupy the 50 py (165 m^2) and 70 py (231 m^2) lots, it is expected that the housing units would be mostly contractor-built averaging about $46/$m^2$.

Table 1

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Estimated 1976 Income Distribution for Gwangju Region

Annual Household Income W'000			Annual Household Income US$			Percent of Households
	-	580		-	1,450	20
580	-	696	1,450	-	1,740	10
696	-	824	1,740	-	2,059	10
824	-	956	2,059	-	2,390	10
956	-	1,072	2,390	-	2,680	10
1,072	-	1,195	2,680	-	2,987	10
1,195	-	1,346	2,987	-	3,364	10
1,346	-	1,601	3,364	-	4,002	10
1,601	+		4,002	+		10

Sources and Assumptions

The above figures are derived from an estimate of the 1976 Income Distribution of Korea which was based on the following sources:

- Rural income distribution: Report on the Results of Farm Household Economy Survey and Production Cost Survey of Agricultural Products, 1972, Ministry of Agriculture and Forestry, ROK.
- Urban income distribution: Annual Report on the Family Income and Expenditure Survey 1971, Bureau of Statistics, EPB, ROK.
- Surveyed income levels are adjusted to correspond to national income statistics.
- 1972-1976 per capita income growth rates, 14.7% per year (rural) and 15.8% per year (urban) in current terms: Current Economic Position and Prospects of the Republic of Korea, I.B.R.D., February 20, 1974, Vol. 1, p. 53.
- 1972-1976 population growth rates, -0.6% per year for rural population and +2.8% per year for urban population: Current Economic Position ..., op. cit. p.55a (1972-1981 growth rates).
- The relative income distribution is assumed to remain unchanged between 1971-1976.
- A household size of 8 persons is assumed for all households in Gwangju.
- Percentage distribution of all households is assumed to be the same in the nation as a whole.

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Yeosu Fishery Harbor Complex

Yeosu

1. Yeosu, located at the middle of the South Sea coast, is Gwangju region's major fishery, passenger and cargo port city. It is a suitable base for exploiting the fishery grounds of the East China Sea and the Japan Sea. The city has grown up around a natural deep water harbor, and has two ports - an old port which is badly congested mainly by passenger and coastal shipping and commercial fishing vessels - and a cargo port which handles exports and imports related mainly to heavy industry.

2. While Yeosu accounts for more than 40% of Korea's fishing population, the fish landings at Yeosu are less than 25% of the national total. Congestion and poor facilities at the old port have restricted landings of the fishing fleet.

3. At present, most vessels over 50 gross registered tons (GRT) based in Yeosu, land the bulk of their catch in other ports of the south coast, principally at Busan (outside the Gwangju region) (Table 1). Since these ports are farther away from the East China Sea, the main fishing grounds for the Yeosu fleet, landing fish catches from the Yeosu area entails extra fuel expense and a loss of fishing time. Nevertheless, shipowners and skippers prefer this to the long delays incurred in unloading and servicing in Yeosu and the risk of damage to their vessels due to the crowded port conditions. Existing facilities for the landing, handling and discharge of fish and marine products in Busan are being used to full capacity.

4. The construction of a new fishery complex to relieve the congestion at the old port, and to increase the volume of Yeosu fish landings is a primary target of both municipal and national plans. A site has already been designated by the city for the development of a fishery harbor with related commercial and residential facilities. An area of 30 ha has been set aside for an industrial zone of which 12.5 ha would be developed immediately under the proposed project. An access road linking the new fishery harbor complex and related housing area to the national highway to facilitate the trucking of fish and fish products in increased volume to Suncheon, Gwangju City and other urban areas is also a part of the proposed project.

5. In addition to its established role as the center of fishery activity in the region, the city is beginning to function as an indutrial base for the Yeosu-Suncheon subregion. Since 1967, a Cal-Tex oil refinery

and a power plant have been located in a planned industrial estate 20 km from Yeosu. A second power plant in the estate was completed in 1973. To take advantage of these power sources and to expedite development of the subregion, the Government is encouraging the location of other heavy industries, petrochemicals, fertilizers, heavy chemicals, metal products and machine making in the vicinity of Yeosu and Gwangyang 60 km to the north coast. A scheme to bring industrial water from the Sumjin River to this region has just commenced. These developments would change markedly the pattern of migration to Yeosu.

6. The city's population is 122,000 and under current national plans is projected to increase to 300,000 by 1981. Such an increase would exacerbate the pressure on housing and other infrastructure that already exists.

7. The development of new areas, including the planned development of a new fishing port and accompanying residential area, is necessary to the provision of greater employment opportunities and a higher standard of living in Yeosu.

Trends

8. Registers for 1972 show that the fishing fleet based in Yeosu consists of 492 vessels with a total tonnage of 6,700 GRT of which 357 with a total tonnage of 6,200 GRT are motorized. In addition, 69 "Fish Carriers," 1/ also registered as fishing vessels and totalling 3,000 GRT, are based in Yeosu.

9. The composition of the fishing fleet is changing. The number of vessels under 20 tons which fish mainly in the coastal area around Yeosu are expected to remain more or less stable. In contrast, the number of bull trawlers (90 to 100 GRT) and stow netters (50 to 90 GRT) which are engaged in offshore fishing in the East China Sea will increase, as the exploitation of these fishing grounds has been found to be highly profitable. Private sector investments in larger fishing vessels are now being facilitated by the Government. Catches in the East China Sea are very good, and records show increases both in total catch, and in catch per haul (see Table 3). In recent years, catch per vessel in this area has been increasing, with Korean fishing vessels from Yeosu gradually replacing Japanese vessels. The number of intermediate size stow netters and gill netters (20-30 tons) would decrease as some of them would be replaced by larger vessels. These trends are reflected in the projections shown in Tables 4 and 5.

10. New shore-based processing facilities are being built in Yeosu by private firms to process Alaskan Pollack caught by deep sea trawlers. Initially, it is expected that this species will be brought by fish carriers, but a deep sea fishing fleet based in Yeosu will be gradually developed.

1/ Auxiliary fish transport craft attached to fishing vessels operating for long periods at the fishing grounds.

Subproject Description

11. The subproject consists of construction of the first stage development of a new fishery harbor complex with the necessary marketing, storage, supply and maintenance facilities, as well as shelter and berthing for fishing vessels. Behind the port area proper, an area will be delimited to provide serviced sites for a fisheries industrial zone.

12. The site selected for the fishing port is located at Gukdong, which lies southwest of Yeosu City (Map 10962R1). It faces Dolsan Island lying in the northwest part of Gamag Bay. In Yeosu, two possible sites, one in the Shinweol district area (5 km southwest of Yeosu City) and one in the Gukdong district area (2.5 km from the center of the city) were investigated. The Shinweol site has shallow depths (3m and less), is exposed to the sea and has soil conditions unfavorable for construction. The Gukdong site, facing Dolsan Island, is protected from wind and waves from all directions, making unnecessary the construction of sea defenses. It has favorable depths (5m - 7m), and is closer to Yeosu.

13. The site chosen for the proposed port extends seawards from an already reclaimed land area. The 5m depth contour at approximate lowest low water datum (LLW) lies within 150 m from the present low water shoreline. It faces a triangular shaped basin, 1,200 m long and 1,000 m wide, with depths more than 6 m at LLW. The basin is accessible to the north from the old port through a channel about 200 m wide having depths more than 7 m at LLW. The mean tide range is about 2.02 m, ranging from a mean high of 2.8 m above LLW to a mean low of 0.8 m above LLW. The fishery complex would include the port area proper and a fish processing industrial zone. In the port area, essential port services and a fisheries terminal will be built, including the main fish handling and wholesale marketing facilities.

14. The harbor will provide the following services to fishing vessels:

(a) Landing quays where daily fish catches (vessels 30 to 110 GRT) would be unloaded and conveyed to the fish auction market. Two piers each of 80 m length, and 265 m of quay will provide berthing with a minimum depth of 4 m at LLW.

(b) Servicing quays providing ice and fuel. These quays will be used only by vessels preparing to go to sea, during the time when supplies are on-loaded. 165 m of quay and an 80 m pier will provide the necessary berthing facilities. The depths alongside the quay will not be less than 4 m at LLW, while at the pier, the depth will be a minimum of 6 m at LLW.

(c) Berthing quays where fishing vessels will be moored, while crews rest or when minor maintenance work is effected, or when food and other miscellaneous supplies other than those provided by (b) are on-loaded. 190 m quay at a minimum depth of 4 m at LLW will be provided.

(d) A berthing pier for large vessels (1,000 GRT and over) will be provided for the frozen catches. The pier will be 200 m in length and will provide the minimum depth of 6 m at LLW.

(e) Fresh water supply would be provided at most quays, including the servicing and berthing quays.

During Stage I development, already existing repair facilities, slipways and vessel repair yards would be utilized. Vessels under 30 GRT will continue to use the existing Marine Center in the old port area, until future extensions of the fishery harbor can be effected.

Fisheries Terminal

15. Fresh fish landed by the projected fleet will be handled through a fisheries terminal consisting of a fish auction market, an ice-making plant (with an initial production capacity of 150 ton/day, expandable to 450 ton/day), a small freezing plant and storage rooms for chilled and frozen fish (Table 5). These facilities will handle only fish landed in ice.

16. Frozen fish from the North Pacific stern trawlers (projected to about 1977-78) or fish carriers would be transferred directly to a nearby industrial plant where it will be reprocessed.

Cost Estimates

17. Estimates as shown in Annex 3 are considered realistic and based on preliminary engineering prepared by MOC and their consultants (KECC) in association with Japan Port Consultants Ltd. using costs as of early October 1974.

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SECONDARY CITIES REGIONAL PROJECT

Recorded and Estimated Catches and Landings in Yeosu and Yeocheon County

(1972)

	Estimated catches	Estimated landings in Yeosu	Landings in other centers of Yeocheon County	Estimated landings outside Yeocheon County
	tons			
Motorized vessels based in Yeosu	60,500	41,000	-	19,500
Sailing and rowing boats based in Yeosu	6,300	6,300	-	-
Boats based in other centers of Yeocheon County /1	25,600	7,000	18,600 /2	-
Total	92,400	54,300 /2	18,600	19,500

/1 These centers are villages of the districts of Dolsan, Samil, Yulchon, Sola and Sangbong.

/2 Recorded landings.

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SECONDARY CITIES REGIONAL PROJECT

Fishing Fleet of Yeocheon County - 1972

Vessel tonnage range (GRT)	Yeosu			Yeocheon County, Yeosu Excluded		
	Total number of vessels	Number of motorized vessels	Number of sailing and rowing boats	Total number of vessels	Number of motorized vessels	Number of sailing and rowing boats
50 and over	48	48	-	-	-	-
30-50	19	19	-	-	-	-
20-30	84	84	-	7	7	-
10-20	128	109	19	93	72	21
5-10	59	59	-	146	133	13
2-5	141	107	34	550	369	181
below 2	81	-	81	2,321	87	2,234
Total	560 /1	426 /1	134	3,117	668	2,449

/1 Includes 69 fish carriers.

Source: Fisheries Agency, Yeosu

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SECONDARY CITIES REGIONAL PROJECT

East China and Yellow Sea Fisheries

A. Catch by Bull Trawlers

Year	Total Catch (tons)	Number of Hauls	Catch per Haul (tons)
1964	63,089	225,318	0.280
1965	82,257	261,965	0.314
1966	78,048	225,572	0.346
1967	95,115	333,737	0.285
1968	103,639	468,955	0.221
1969	116,825	480,761	0.243
1970	143,763	454,946	0.316
1971	168,211	519,170	0.324

B. Catch by Stow Netters

Year	Total Catch (tons)	Number of Sets	Catch per Set (tons)
1963	50,217	23,721	2.117
1964	71,738	34,807	2.061
1965	72,418	30,466	2.377
1966	83,147	35,870	2.318
1967	109,837	35,351	3.107
1968	96,060	36,318	2.645
1969	79,437	37,602	2.086
1970	99,455	25,178	3.950
1971	103,562	26,419	3.920

C. Catch by Mackerel Purse Seiners

Year	Total Catch (tons)	Number of Hauls	Catch per Haul (tons)
1966	8,502	534	15.93
1967	6,206	541	11.48
1968	11,574	916	12.63
1969	41,796	1,945	21.49
1970	34,990	1,385	25.26
1971	60,947	2,675	22.79
1972	77,498	2,652	29.9

Source: Fisheries Research and Development Agency, Yeosu Station.

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SECONDARY CITIES REGIONAL PROJECT

Projection of Future Number of Vessels, Catches and Landed Fish Value for the Motorized Fishing Fleet of Yeosu

Vessel tonnage range (GRT)	Main types of vessels	Number of motorized vessels				Catches of motorized vessels ('000 tons)				Fish prices (W '000 per ton in 1973)	Value of catch in W million calculated on the basis of 1973 fish prices			
		1972 (base year)	1977	1979	1981	1972 (base year)	1977	1979	1981		1972 (base year)	1977	1979	1981
90–110	Bull trawler	10	20	25	30	9.0	18.0	22.5	27.0	80	720.0	1,440	1,800	2,160
70–90	Bull trawler	14	30	35	40	10.1	21.6	25.2	28.8	85	858.5	1,836	2,142	2,448
50–70	Stow netter	6	40	50	60	4.3	29.0	36.3	43.5	65	279.5	1,885	2,360	2,828
30–50	Stow netter	14	20	20	20	6.7	9.6	9.6	9.6	70	469.0	672	672	672
20–30	Stow netter and gill netter	51	50	45	40	13.8	13.5	12.1	10.8	90	1,242.0	1,215	1,089	972
10–20	Inshore boat	96	90	90	90	11.5	10.8	10.8	10.8	100	1,150.0	1,080	1,080	1,080
5–10	Inshore boat	59	60	60	60	2.9	3.0	3.0	3.0	120	348.0	360	360	360
below 5	Inshore boat	107	110	110	110	2.1	2.2	2.2	2.2	130	273.0	286	286	286
Total		357	420	435	450	60.4	107.7	121.7	135.7		5,340.0	8,774	9,789	10,806
Increment over 1972		-	63	78	93	-	47.3	61.3	75.3			3,434	4,449	5,466

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SECONDARY CITIES REGIONAL PROJECT

Projections of Fish Landings

	Amount				Estimated Value At 1973 Prices			
	1972 (base year)	1977	1979	1981	1972 (base year)	1977	1979	1981
	('000 tons)				(In Billion Won)			
Landings from rowing and sailing boats of Yeosu /1	6.3	6.3	6.3	6.3	0.6	0.6	0.6	0.6
Landings from motorized vessels of Yeosu /2	60.4	107.7	121.7	135.7	5.3	8.8	9.8	10.8
Landings from fishing craft of nearby centers /1	7.0	7.0	7.0	7.0	0.7	0.7	0.7	0.7
Total fresh fish landings /3	73.7	121.0	135.0	149.0	6.6	10.1	11.1	12.1 /1
Frozen fish landings from fish carriers or deep sea trawlers /4	-	82.0	82.0	82.0	-	4.1	4.1	4.1
Total fish landings	73.7	203.0	217.0	231.0	6.6	14.2	15.2	16.2
Increment over 1972	-	129.3	143.3	157.3	-	7.6	8.6	9.6

/1 See Table 1 for 1972 (base year) landings.
/2 See Table 4.
/3 Not all the 1972 landings were made in Yeosu (See Table 1).
/4 Price for frozen fish (Alaskan pollack) is W 50,000 per ton.

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SECONDARY CITIES REGIONAL PROJECT

Requirements for Facilities of the Fisheries Terminal in the Fishing Port Area

	In Old Port (Reported 1973)	In Proposed Port (Projected 1981)
Approximate quantity of fresh fish handled in port	54,000 tons	150,000 tons
Ice production	35 tons/day	350 tons/day (with space for 50% extension)
Ice storage	300 tons	1,500 tons (with space for 50% extension)
Chilled fish storage	Included above	100 tons
Freezing	5 tons/day	25 tons/day
Frozen storage	300 tons	800 tons
Fish market buildings area	230 m^2	8,000 m^2

Remarks

1. Fish market area - Present facilities are totally inadequate. Production would be six times more in 1976, and nine times more in 1981. At present 54,000 tons are handled, but the space available is insufficient for efficient handling.

2. Ice production - Present production is totally inadequate, especially so in summer. Estimated vessel consumption would be 75% of the quantity of fish landed + 25% of the quantity for the re-icing after sale and for other miscellaneous purposes.

3. Ice storage - Equivalent to between four and five days production to cope with peak daily landing fluctuations.

4. Chilled storage - Must be separated from ice storage, and used in emergency for unsold fish. Estimated requirement: 20% of average daily landings.

5. Freezing - To cater only for requirements of users without contract with private processors. Estimates are related to present and projected landings and facilities, with a maximum accumulation of 800 tons.

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Technical Assistance

1. The Government has requested technical assistance in the implementation of the project. Specifically, consultants' services would be required:

(a) to assist in the establishment and operation of the Gwangju Regional Development Unit (GRDU) at the provincial level;

(b) to strengthen regional planning at the national level;

(c) to provide advisory assistance for management and operation of the Yeosu fishery harbor complex;

(d) to prepare a program involving provision of technical assistance in water supply operation and management and identification of short-term improvements in the water supply systems in the four cities; and

(e) to carry out feasibility studies and the preparation of selected projects to be identified in the UNDP Phase II Study and in studies undertaken by MOC.

2. GRDU. The main functions of GRDU as outlined in para. 5.12 necessitates the services of at least four advisors during the implementation of the project. The type of advisory assistance and scope of work envisaged will be refined when a final work program for GRDU is formulated.

- A senior advisor would be required to advise the Project Manager on overall management and on the engineering and technical supervision of the project with particular reference to designs, costs and specifications.

- An advisor (economist/planner) would be required to assist the GRDU in formulating a work program involving review of proposed provincial development plans and ministerial investment plans, and advisory assistance to the cities to review urban land use plans with respect to the proposed infrastructural investments.

- An advisor (engineer/economist) would be required to review proposed housing designs and construction methods for the housing sites and services subproject, establish monitoring and evaluation procedures, and assist the Government's Task Force on Housing Policy in formulating a national housing policy.

- An advisor (economist) would be required to assist in reviewing proposals resulting from the UNDP Phase II Study, and in identifying selected projects for feasibility study.

3. Regional Planning Advisor. One consultant would be required to assist the Ministry of Construction in the review of regional development policies including assisting in the formulation of a housing policy, development of a program of self-help housing construction, and the training of the regional planning staff. He would assist the Director of National Planning Bureau in formulating a work program for the review of provincial development plans, and advise the Director on specific programs under the responsibility of the National Planning Bureau.

4. Management Assistance to the Fishery Harbor Complex. Three consultants would be required to assist the Office of Fisheries in the management and operation of the fishery harbor complex. An engineering advisor would advise the harbor manager on harbor management, including the planning, operation and maintenance of its various facilities. The engineering advisor would be required to have fishery industries experience because of the large industrial processing site which would require the harbor manager's supervision. The engineer would also advise on general policy, development of harbor by-laws, preparation of the annual budget, establishment of charges and fees for various harbor services and updating of the harbor master plan and capital improvements program. He would advise the harbor manager on financial objectives that the port should establish, guidelines for operating procedures and the coordination required between the existing ports in Yeosu and the users of the new harbor complex. A fishery harbor advisor would be needed to work on fish and truck traffic movements within the harbor complex, to establish a schedule of fees and landing charges, and to assist on general administrative work. A marine advisor experienced in marine traffic control would provide assistance in off-shore safety regulations of vessels, supervision of fleet servicing and bunkering facilities, preparation of marine charts, compilation of harbor dues and registration of vessels. He will also advise in port expansion plans and development of access channels.

5. Technical Assistance for Water Supply. Consultants' services would be required to develop a program involving the identification of short-term improvements that would maximize use of existing water supply facilities and provide advice on operational and technical matters. The water supply study

would examine present operations, maintenance, management (including pricing) and training practices. A program would be prepared which would include: (i) rehabilitation and improvements of existing sources of water supply and water treatment plants, (ii) expansion of the distribution system for industrial, commercial and domestic water supplies to serve new areas of urban development, (iii) improvements in technical standards of water works operations and maintenance, (iv) reduction in unaccounted for water in the existing networks, (v) improvements in management standards, and (vi) improvements in staff training.

6. Feasibility Studies of Selected Projects. Consultants' services are also required for feasibility studies and the preparation of selected projects to be identified in the UNDP Phase II Study and in studies undertaken by MOC. The consultants' tasks in these specific studies would include the preparation of plans for drainage, sewerage and night soil disposal.

- Drainage and Sewerage

  Develop plans for sewerage and storm water drainage, prepare a staged construction program and, where appropriate, undertake preliminary engineering studies and cost estimates for the first construction stage.

- Night Soil Disposal

  Prepare a program aimed at immediate improvements in the disposal of human wastes, investigate low-cost solutions for treatment and disposal of human wastes, and prepare preliminary engineering studies and cost estimates for the next construction stage.

Terms of reference for these studies will be prepared by the Gwangju Regional Development Unit.

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Financial Arrangements

A. Project Financing Plan

1. The overall financing plan for the project is shown below:

Project Financing Plan

Project Component	W Million				US$ Million			
		Source of Funds				Source of Funds		
	Total Cost /1	Bank Loan	Gov't. Cont'bn.	City of Suncheon	Total Cost /1	Bank Loan	Gov't. Cont'bn.	City of Suncheon
Housing Sites & Services	2,418.17	831.93	1,586.24	-	6.05	2.08	3.97	-
Yeosu Fishery Harbor Complex	4,860.81	3,699.65	1,161.16	-	12.15	9.25	2.90	-
Suncheon City Market	494.25	296.55	-	197.70	1.23	0.74	-	0.49
Access Roads	1,526.74	771.87	754.87	-	3.82	1.93	1.89	-
Technical Assistance	700.00	400.00	300.00	-	1.75	1.00	0.75	-
Total	9,999.97	6,000.00	3,802.27	197.70	25.00	15.00	9.51	0.49

/1 Total cost includes both price and physical contingency.

(a) The Bank loan to the Government of Korea would be W 6,000 million (US$15.0 million) or about 60% of total project costs. About W 3,700 million for the Fishery Harbor Complex, W 772 million for the access roads, and W 400 million for technical assistance will be allocated through the Central Government Budget to MOC for Project execution and implementation. About W 832 million for the Housing Sites & Services, and W 297 million for the Suncheon City Market will be channelled by the Central Government (Ministry of Finance) through subsidiary Loan Agreements to the cities of Gwangju, Yeosu, Mogpo and Suncheon.

(b) The Government of Korea would provide W 3,802 million (US$9.51 million) or about 38% of the total project costs. About W 1,161 million for the Fishery Harbor Complex, W 755 million for the access roads, and W 300 million for technical assistance will be allocated through the Central Government Budget to MOC for Project execution and implementation. About W 1,586 million will be provided for the Housing Sites & Services, part of which (about W 967 million) will be in the form of Korea Housing Bank (KHB) loans to the cities.

(c) The City of Suncheon would provide W 198 million (US$0.49 million) or about 2% of the total project costs, as equity capital for the Suncheon City Market.

B. Housing Sites and Services

2. General. The total cost for these components is estimated at about W 2,418.17 million including contingencies. MOC would carry out the construction and upon completion, the sites would be turned over to the cities for sale to occupants. Funds for the construction of low-cost housing (not financed under the project) would be channelled from the Korea Housing Bank (KHB) through the cities to low- and middle-income site occupants. The cities would collect payments on the housing construction loans from the low- and middle-income site occupants and pass them on to KHB.

3. The Government. The cost of off-site infrastructure, community facilities, green areas, and engineering, although allocable to the Government, would be paid by the cities. However, the Government would assume a pro rata share of the cities' debt service payments equivalent to that portion of the cities' loans corresponding to the costs of these items. The total Government indebtedness would be W 1,062 million and would be distributed as follows:

City	Government Loan Obligation (W Million)
Yeosu	292.627
Mogpo	340.620
Gwangju	429.057
	1,062.304

The proportion of the Government's share of the loans would initially be 44%. The Government's share would then increase during site construction as the cities periodically transfer all payments (down payments, monthly payments, cash sales) received from lot purchasers. (See Table 2).

Allocation of Sites and Services Costs

4. The Cities. The full cost of land and the costs of site preparation and on-site infrastructure would be charged to the cities. The cities would then charge the site occupants a lot price sufficient to recover these costs. The financial arrangements between the cities and the Government would require that the cities commence repayment of any loan obligation for the above costs only after all construction is completed. The terms of the financial obligations would be as follows:

(a) no interest would be charged until the construction of sites is completed;

(b) during the period of site construction, the cities would pass on to the Government on a quarterly basis all payments (down payments, monthly payments, and cash sales) received from purchasers of the lots;

(c) when construction of the sites is completed, the cities would repay the Government a sum equal to the expenditures incurred by GRDU on behalf of the cities for site preparation and development less the aggregate of lot purchaser payments passed on to the Government during construction;

(d) arrearages and bad debts would be borne by the cities;

(e) the cities would retain title to the sites until site occupants have paid in full. All resales of 35 py and 50 py lots shall be subject to approval by the Urban Project Units within a period of five years from the date of signing of the corresponding loans.

Expenditures for the construction and development (including land acquisition) of sites not covered by the Government loan would be provided by the Korea Housing Bank. KHB loan would cover: (i) the cost of land acquisition; and (ii) that part of the cost of civil works and engineering consultants' services not financed by the Government loan. The terms of repayment would be over a period of 15 years with a 3 year grace period at a rate of interest of 8% per annum for the KHB loan and over a period of 25 years with a grace period of 7 years at the rate of interest of 8% per annum for the Government loan.

The projected city cash flow statements in constant 1974 prices for the three housing sites and services components are in Table 2 (lots only).

5. The Site Occupants: The sale prices for the housing sites are based on the allocation formula outlined in Table 1. Low- and medium-income households who are expected to occupy the 35 and 50 py lots would pay a lot price equal to the allocated cost whereas high-income households would be charged a price 30% above the allocated cost (see Table 1). The 30% premium on the 70 py lots reflect closely the market value of improved lots as appraised by the Korea Appraisal Board.

6. A 20% down payment on the lot purchase would be required from households purchasing the 35 py lots and a 50% down payment would be required from households purchasing the 50 py lots. However, about 40% of the 35 py purchasers would have initial debt service payment up to 15% lower than those required under constant monthly payments provided that subsequent debt payment would increase over time to meet the full amount of the purchasers' debt obligations. The repayment terms on the loan for the balance would be 12%, 15 years. The 70 py lots would be sold on a cash basis only. The 12% interest charged project beneficiaries is 4% higher than the present rate for public housing in Korea and the rate which the Government is charging the cities for the development of sites. This 4% interest spread and the 30% surcharge on buyers of the 70 py lots would help the cities meet the attendant administrative and default expenses without undue strain on their own finances.

7. Financing for the cost of housing construction for low- and middle-income site occupants would be made available by the Korea Housing Bank, through the cities. The average construction costs for the low-income housing to be built on the 35 py lot is estimated at W 605,000 for the 12 py house built by self-help and W 903,000 for the 15 py house built by a contractor. For low-income site occupants who choose to build their house with help from contractors, KHB would finance up to 80% of the cost, through the city. The repayment terms for the site occupants would be 12% and 15 years. It is expected that two-fifths of all the houses on the 35 py lots will be of the self-help variety. The housing cash flow is given in Table 3.

8. To afford the high housing cost in Korea, more than one household usually shares a house. An extensive housing survey carried out in the region in 1973 and also in 1974 confirms this practice.

Monthly Charges

9. A low-income household desiring to construct a 12 py (40.6 m^2) house on a 35 py lot would experience the following monthly charges assuming the following:

(a) the 20% down payment on the lot has been met;

(b) the 20% down payment on the house has been met;

(c) the balance on lot would be repaid in 15 years at 12%;

(d) the balance on the housing would be repaid in 15 years at 12%;

(e) the occupant builds with the help of a contractor but provides family labor; and

(f) initial debt service payments are 15% below face value.

All numbers are based on the 1973 survey, unless otherwise indicated.

Basic Charges	W 000			US$		
	Yeosu	Mogpo	Gwangju	Yeosu	Mogpo	Gwangju
Land Development	5.32	5.01	4.93	13.31	12.53	12.32
Water	0.69	0.69	0.58	1.73	1.73	1.45
Sewerage and Waste Disposal	0.29	0.29	0.43	0.73	0.73	1.08
Electricity /a	1.00	1.00	0.50	2.50	2.50	1.25
	7.30	6.99	6.44	18.27	17.49	16.10
Housing	5.03	5.03	5.03	12.58	12.58	12.58
	12.33	12.02	11.47	30.85	30.07	28.68

/a Based on the 1974 Survey.

10. These monthly charges have been estimated for 1976 when some housing construction would be completed. Assuming that low-income households can devote no more than 25% of their monthly incomes to housing and utilities, over 80% of all households would have sufficient incomes to afford a house on a 35 py lot. If the calculation is adjusted to compensate for the lower average income in Gwangju region, households with incomes just above the 20th percentile in the income distribution curve would be reached (Table 1, Annex 5).

C. Suncheon City Market

11. The total cost of the market would be about W 494 million including both physical and price contingencies. About 40% or W 198 million would be provided by the city of Suncheon as equity capital. MOC would construct the market and turn it over to the city which would then have to repay 60% of the cost (W 296 million) over 25 years at 8% with 7 years grace on the repayment of the principal. The market's cash flow statement in constant 1974 prices for the market is given in Table 4. The financial rate of return is about 19% in constant 1974 prices.

12. Expenditures. In addition to the debt service payments, the following expenditures have been considered:

(a) Administration: Five percent of long run gross operating revenues excluding deposits plus payroll expenditures of W 2.88 million in 1977 and increasing to 4.38 million by 1982.

(b) Utilities: W 1.57 million per year in 1974 prices. These charges are for the five day and daily markets. Shops in the main building would be individually responsible for payment of their utility cost.

(c) Repairs and Maintenance: Annual expenditures of 2% of the development costs, excluding land and off-site infrastructure costs.

13. Revenues. Revenues would be derived mainly from the following sources:

(a) Monthly rentals from users of shop and storage space in the market buildings and the sheltered area;

(b) initial deposits remitted by the storekeepers at the time of the rental application;

(c) daily rentals paid by stallkeepers and peddlers for the use of the daily market and five-day markets;

(d) other income, from events such as circuses and special shows (not considered here).

The following monthly rent will be charged:

	Area (py)	Rent/py (W)
Daily necessities market - first floor	183.1	1,100
second floor	183.1	900
Fish market - one floor	261.5	1,100
Grain market - one floor	627.7	1,100
Sheltered market	499	500

14. It is common practice for shopkeepers to pay a deposit to the landlord at the time space is rented. This deposit is usually sizeable, and is often used by the landlord to repay a portion of the capital costs of the building. In the case of the city market, the deposit will not be refundable. However, a shopkeeper who vacates his premises collect a negotiated deposit from the new lessee. Deposits to be collected would average about W 72,000 per pyong in the buildings and W 24,000 for the sheltered area.

15. The revenues derived from the market yards are based on the following:

five-day market	2,709 pyong; used as a five-day market every fifth day with rents of W 60 per pyong per day
daily market	3,000 pyong; with rents W 50 per pyong per day; the market is assumed to operate for 360 days in a year, and 90% collection efficiency is assumed.

16. The following occupancy rate is expected:

	1977	1978	1979	1980	1981
Buildings					
first floor	55%	95%	100%	100%	100%
second floor	45%	85%	100%	100%	100%
Sheltered Market	50%	70%	90%	100%	100%
Daily and Five-Day Market	25%	45%	65%	85%	100%

D. Yeosu Fishery Harbor Complex

17. The fishery harbor complex consists of the port, fishery harbor facilities and industrial site. Upon completion of construction, the harbor complex would be turned over to the Office of Fisheries - a government department.

18. Expenditures. The project expenditures would comprise operation and maintenance costs of harbor infrastructure and civil works, which include payroll, utilities, repairs and maintenance plus administration expenses. Operation and maintenance costs are estimated at 5% of the original cost of port infrastructure and civil works including contingencies and professional services.

19. Revenues. The project revenues would be derived from (a) the sale and development charges of serviced land in the fishery industries zone; (b) lease rents for the use of the harbor land, buildings and equipment; and, (c) landing and embarkation charges from fishing boats. The cash flow table (Table 5) shows that the revenues are sufficient to cover the cost of operation and maintenance and that the cash surplus would be turned over to the national government.

20. For city-owned land of 17,640 py, a net area of 14,000 py would be sold at the average price of W 50,000 per pyong (the average market price of similar land located in the old port proper is W 100,000 per pyong as of April 1974).

21. For already occupied land of 9,160 py by private concerns in the industrial area, a development charge for the infrastructural services will be made at W 10,000 per pyong.

Year	Total Revenues /1 (W million)
1977	30.5
1978	30.5
1979	30.6

/1 Private owners will be required to pay development charges (betterment levy) in equal payment over the three-year period (1977-79).

22. Lease rental revenues from harbor storage area, buildings and equipment consists of:

(a) Annual lease rents from the storage area of 5,000 py within the port at a base rental of W 6,000 per pyong, which is equivalent to one half the prevailing rental within the old port.

Year	Space Available (py)	Annual Rate (W/py)	Revenues (W million)
1977	5,000	6,000	30.0
1978	5,000	6,000	30.0
:	:	:	:
2025	5,000	6,000	30.0

(b) Rents from market, leasable buildings and equipment at an annual base rental of W 38.6 million.

23. At present, a landing fee of W 650 per ton of catch landed and a base embarkation charge of W 5 per gross tonnage of fishing vessels a day are being collected at the old port which would also be imposed in the new port.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Land Development Cost /1 and Household Loan Obligations
for the Housing Sites and Services Component

(W 000)

	YEOSU		MOGPO		GWANGJU	
	Total Cost	Directly Chargeable Cost /2	Total Cost	Directly Chargeable Cost /2	Total Cost	Directly Chargeable Cost /2
Land Development Cost						
Land	107,940	103,434	55,760	53,990	220,650	214,353
Site preparation	118,023	118,023	161,580	161,580	37,540	37,540
On-site Infrastructure	183,397	183,397	241,670	241,670	240,110	240,110
Off-site Infrastructure	244,210	-	278,770	-	370,700	-
Green areas	1,660	-	1,430	-	1,880	-
Community Facilities	-	-	7,130	-	-	-
Professional Services	42,250	-	53,290	-	50,180	-
Sub-total	697,480	404,854	799,630	457,240	921,060	492,003
Cost per py to be sold (W)	31,510	18,290	30,067	17,193	31,690	16,928

Cost, Sale Price, Financial Obligation per lot	YEOSU			MOGPO			GWANGJU		
	35 py lot	50 py lot	70 py lot	35 py lot	50 py lot	70 py lot	35 py lot	50 py lot	70 py lot
Number of lots	395	92	53	475	121	56	495	134	72
Chargeable cost of lot to site occupants /3	640	915	1,280	602	860	1,204	592	846	1,185
Sale price per lot /4	640	915	1,664	602	860	1,565	592	846	1,540
Downpayment /5	128	458	1,664	120	430	1,565	118	423	1,540
Loan obligation per lot	512	457	-	482	430	-	474	423	-

/1 Cost includes both price and physical contingencies.
/2 Site occupants will pay for land, site preparation, and on-site infrastructure costs.
/3 Derived from "cost per py to be sold" above.
/4 The 35 py lot and 50 py lot will be sold at cost; the 70 ply lot 30% above cost.
/5 Downpayment: 20% for 35 py lot, 50% for 50 py lot, 70 lots will be sold for cash only.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cash Flow Statements for the Housing Sites and Services Components (Lots only)

Yeosu, Mogpo and Gwangju
(W Million)

	1975	1976	1977	1978	1979	1980	1990
YEOSU							
Revenue from Lot Sale							
35 py lot /1	-	21.558	30.884	40.249	28.511	29.175	4.924
50 py lot /2	-	14.718	17.318	18.906	6.173	6.173	1.007
70 py lot /3	-	-	44.928	43.264	-	-	-
Gross Revenue	-	36.276	93.130	102.419	34.684	35.348	5.931
Operating Expense /4	-	5.100	5.100	5.100	5.100	5.100	5.100
Net Revenue	-	31.176	88.030	97.319	29.584	30.248	0.831
Loan Repayment - KHB	-	5.580	22.319	22.319	37.021	37.021	37.021
- MOF	-	-	-	-	33.479	33.479	44.654
Gross Loan Repayments	-	5.580	22.319	22.319	70.500	70.500	81.675
Government Pro Rata Share of Loan Repayment /5	-	2.344	10.267	12.722	48.645	48.645	56.356
Transfer to Government by City /6	-	27.940	75.978	87.722	-	-	-
City Net Loan Repayments	-	3.236	12.052	9.597	21.855	21.855	25.319
Annual Cash Surplus	-	-	-	-	7.729	8.393	(24.488)
Cumulative Cash Position	-	-	-	-	7.729	16.122	30.240
MOGPO							
Revenue from Lot Sale							
35 py lot /1	-	21.588	34.730	45.616	32.268	32.939	5.626
50 py lot /2	-	17.831	20.988	23.974	7.639	7.639	1.295
70 py lot /3	-	-	43.820	43.820	-	-	-
Gross Revenue	-	39.419	99.538	113.410	39.907	40.578	6.921
Operating Expense /4	-	5.240	5.240	5.240	5.240	5.240	5.240
Net Revenue	-	34.179	94.298	108.170	34.667	35.338	1.681
Loan Repayment - KHB	-	6.397	25.588	25.588	42.443	42.443	42.443
- MOF	-	-	-	-	38.382	38.382	51.193
Gross Loan Repayments	-	6.397	25.588	25.588	80.825	80.825	93.636
Government Pro Rata Share of Loan Repayment /5	-	30.533	12.026	14.585	55.769	55.769	64.609
Transfer to Government by City /6	-	30.715	80.736	97.167	-	-	-
City Net Loan Repayment	-	3.646	13.562	11.003	25.056	25.056	29.027
Annual Cash Surplus	-	-	-	-	9.611	10.282	(27.346)
Cumulative Cash Position	-	-	-	-	9.611	19.893	43.254
GWANGJU							
Revenue from Lot Sale							
35 py lot /1	-	22.168	35.661	46.685	33.072	33.761	9.187
50 py lot /2	-	19.734	23.227	25.568	8.323	8.323	1.367
70 py lot /3	-	-	55.440	55.440	-	-	-
Gross Revenue	-	41.902	114.328	127.693	41.395	42.084	10.554
Operating Expense /4	-	5.280	5.280	5.280	5.280	5.280	5.280
Net Revenue	-	36.622	109.048	122.413	36.115	36.804	5.274
Loan Repayment - KHB	-	7.365	29.459	29.459	48.864	48.864	48.864
- MOF	-	-	-	-	44.226	44.226	58.987
Gross Loan Repayment	-	7.365	29.459	29.459	93.090	93.090	107.851
Government Pro Rata Share of Loan Repayment /5	-	3.462	14.730	17.675	67.025	67.025	77.653
Transfer to Government by City /6	-	32.719	94.319	110.629	-	-	-
City Net Loan Repayment	-	3.903	14.729	11.784	26.065	26.065	30.198
Annual Cash Surplus	-	-	-	-	10.050	10.739	(24.924)
Cumulative Cash Position	-	-	-	-	10.050	20.789	53.867

/1 Terms: 20% down and the remainder in equal monthly installments over 15 years at 12%. Initial debt service payments may be 15% below required payments for some buyers. One-third will be occupied in 1976, one-third in 1977, and the rest in 1978.
/2 Terms: 50% down and the remainder in equal monthly installments over 15 years at 12%. One-third will be occupied in 1976, one-third in 1977, and the rest in 1978.
/3 Terms - cash sale only. One-half will be occupied in 1977 and the rest in 1978.
/4 Includes Administration and Default expenses. Default expenses at 3% of long-run gross income.
/5 For off-site infrastructure, community facilities and green areas, engineering.
/6 During construction city shall transfer all payments received from lot purchasers.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cashflow for Housing to be built on Serviced Lots
(in W '000)

	1976	1977	1978	1979	1990
YEOSU					
Revenues from Housing Construction					
12 py houses /1	7,213	11,215	14,453	10,109	1,848
15 py houses /2	16,393	26,861	35,236	25,125	4,188
18 py houses /3	17,419	20,502	22,388	7,321	1,194
Gross Revenue	41,025	58,578	72,077	42,555	7,230
Operating Expense					
Default - 3% /4	1,277	1,277	1,277	1,277	1,277
Administration - 1% /5	410	586	721	426	72
	1,687	1,863	1,998	1,703	1,349
Net Revenue	39,338	56,715	70,079	40,852	5,881
Payments to KHB /6	1,990	11,939	19,857	39,470	39,470
Annual Cash Surplus	37,348	44,776	50,222	1,382	-33,589
MOGPO					
Revenues from Housing Construction					
12 py houses /1	8,574	13,331	17,511	12,149	2,274
15 py houses /2	19,713	32,301	43,650	30,213	5,036
18 py houses /3	22,476	26,455	30,219	9,629	1,632
Gross Revenue	50,763	72,087	91,380	51,991	8,942
Operating Expense					
Default - 3% /4	1,560	1,560	1,560	1,560	1,560
Administration - 1% /5	508	721	914	520	89
	2,068	2,281	2,474	2,080	1,649
Net Revenue	48,695	69,806	88,906	49,911	7,293
Payments to KHB /6	2,415	14,491	24,193	48,210	48,210
Annual Cash Surplus	46,280	55,315	64,713	1,701	-40,917
GWANGJU					
Revenues from Housing Construction					
12 py houses /1	8,983	13,966	18,187	12,664	2,345
15 py houses /2	20,543	33,661	44,156	31,485	5,248
18 py houses /3	25,285	29,762	32,761	10,663	1,751
Gross Revenue	54,811	77,389	95,104	54,812	9,344
Operating Expense					
Default - 3% /4	1,644	1,644	1,644	1,644	1,644
Administration - 1% /5	548	774	951	548	93
	2,192	2,418	2,595	2,192	1,737
Net Revenue	52,619	74,971	92,509	52,620	7,607
Payments to KHB /6	2,556	15,337	25,541	50,808	50,808
Annual Cash Surplus	50,063	59,634	66,968	1,812	-43,201

/1 Terms: 20% down and the remainder in equal monthly payments over 15 years at 12% interest. Initial debt service payments may be 15% lower for some buyers.
/2 Terms: 20% down and the remainder in equal monthly payments over 15 years at 12%.
/3 Terms: 50% down and the remainder in equal monthly payments over 15 years at 12%.
/4 Based on 3% long-run gross revenue.
/5 Based on 1% of gross revenue.
/6 Cities responsible to pay KHB for site occupant Housing Loans. Terms: amortized over 15 years with 3 years grace, at 8%.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Cash Flow Suncheon City Market
(W '000)

	1975	1976	1977	1978	1979	1980	1981	1982	1989	1990	1999	2003
Revenue												
Monthly Rental	-	-	5,174	17,230	18,825	19,124	19,124	19,124	19,124	19,124	19,124	19,124
Daily Rental	-	-	7,540	27,140	39,200	51,260	60,303	60,303	60,303	60,303	60,303	60,303
Deposits	-	-	56,360	18,616	8,189	-	-	-	-	-	-	-
Gross Revenue			69,074	82,986	66,214	70,384	79,427	79,427	79,427	79,427	79,427	79,427
Operating Costs												
Administration			6,850	6,850	6,850	7,750	7,750	8,350	8,350	8,350	8,350	8,350
Utilities			1,570	1,633	1,698	1,766	1,837	1,837	1,837	1,837	1,837	1,837
Maintenance			2,633	5,266	5,266	5,266	5,266	5,266	5,266	5,266	5,266	5,266
Gross Operating Costs			11,053	13,749	13,814	14,782	14,853	15,453	15,453	15,453	15,453	15,453
Net Revenue Before Debt Service	-	-	58,021	69,237	52,400	55,602	64,574	63,974	63,974	63,974	63,974	63,974
Debt Service	-	-	11,862	23,724	23,724	23,724	23,724	23,724	23,724	31,642	31,642	-
Net Revenue After Debt Service	-	-	46,159	45,513	28,676	31,878	40,850	40,250	40,250	32,332	32,332	63,974

KOREA

SECONDARY CITIES REGIONAL PROJECT

Direct Public Revenues and Expenditures Statement
for Yeosu Fishery Harbor Complex
(W Million)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1995	1996-2003
Revenues											
Sale of Industrial Land	-	-	100.0	100.0	150.0	150.0	150.0	150.0	-	-	-
Development Charges	-	-	-	30.5	30.5	30.6	-	-	-	-	-
Lease Rents from Harbor Land	-	-	-	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Lease Rents: Building and Equipment	-	-	-	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6
Landing Fee Revenues	-	-	-	119.3	135.9	152.6	169.2	185.8	204.3	204.3	204.3
Embarkation Fees	-	-	-	62.5	68.8	75.6	83.2	91.5	100.7	100.7	100.7
Total Revenues	-	-	100.0	380.9	453.8	477.4	471.0	495.9	373.6	373.6	373.6
Expenditures											
Construction /1	65.08	1,229.34	2,074.36	389.53	-	-	-	-	-	-	-
Operation and Maintenance	-	-	-	82.58	165.15	165.15	165.15	165.15	165.15	165.15	165.15
Surplus Remitted to Government	-65.08	-1,229.34	-1,974.36	-91.21	288.65	312.25	305.85	330.75	208.45	208.45	208,45

/1 Cost includes physical contingencies.

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Cost Recovery and Pricing

1. The recovery of cost for the project will come mainly from project beneficiaries and from government charges, fees and taxes. The sources from which project cost items would be recovered are:

Project Components	Total Cost US$ (Million)	% of Total Cost	Recovery Source and Percentages
Housing Sites & Services	6.05	24.2	Beneficiaries, 56% Government charges & taxes, 44%.
Fishery Harbor Complex	12.15	48.6	Beneficiaries, from sale, lease rents, fees Government from taxes
Suncheon City Market	1.23	4.9	Beneficiaries - 100% (from deposits, rents, and special fees)
Roads	3.82	15.3	Government, user charges
Technical Assistance	1.75	7.0	Government
Total	25.0	100	

Cost Allocation

2. In the case of housing sites and services, the site occupants are charged a proportionate share of the total cost of land, site preparation and on-site infrastructure. The Government bears the cost of off-site infrastructure, community facilities, green areas and engineering which it will recover through beneficiary charges and taxes. The road user and electricity charges are sufficient for complete cost coverage but the water and sewerage/drainage charges are low. Among the objectives of the water, sewerage and drainage study included in the project (the action program) is to determine the actual capital and operating costs of water supply, sewerage

and drainage in the four cities and to propose revised rates. Rate increases should await these proposals. The study will take into account the fact that the on-site infrastructure costs are paid directly by the site occupants at the time of the site purchase -- double charging will not take place. Some of the relevant taxes from which the Government would recover project costs are:

(a) A building materials tax, averaging 3% of the total construction cost, is to be charged on all housing construction on the sites provided through the project. The revenues from this tax will go to the national Government.

(b) A local acquisition tax levied on the houses to be constructed will be collected by the city governments. It amounts to 1% of the construction cost.

(c) A local property tax is levied on the value of land and buildings. The rates are 0.2% of the value of the land and 0.3% of the value of the house.

(d) A local city planning tax will be imposed on the three housing sites and services areas in the project, at a rate of 0.2% of the value of land and houses.

(e) A local community facility tax will also be imposed on the housing sites and services components, at a rate of 0.06% of the value of the houses.

(f) A national tax specifically aimed at capturing some of the increases in the value of land and housing is the so-called real property speculation check tax, which in effect is a capital gains tax (at a 50% rate).

(g) A local tax aimed at capturing some of the benefits derived from public investments is the urban development tax, established by the Urban Development Act. It is a betterment levy imposed on those who benefit from road and drainage investments. About 50% of the investment cost is usually recovered through this tax.

3. For the fishery harbor complex, an analysis of the incremental public revenues and expenditures generated by the project component was carried out to determine the cost coverage. Revenues from the operation of the harbor facilities plus identifiable public charges are more than sufficient to cover proposed investments.

4. The sale price for the industrial sites (W 50,000 per pyong) is set substantially above the development cost to reflect the benefits these sites will derive from their location close to the port. The incremental

income taxes generated by the port, mostly from boat owners, will go to the national government. The vessel tax, 0.3% of the value of the boat, is a local property tax and goes to the city where the boat is registered (in this case mostly to Yeosu).

5. The public revenues and expenditures directly related to the Suncheon city market, excluding off-site infrastructure, show a satisfactory financial rate of return (18%).

Water Charges

6. Revenues from water charges barely cover operating costs in the four cities. All four cities use a block tariff system, with a minimum monthly charge which is fixed up to a certain consumption level -- above this level a unit price, which in most cases increases with the consumption, is applied. The minimum monthly charge for domestic water is W 110 (US$0.28) in Suncheon, W 250 (US$0.62) in Gwangju, and W 300 (US$0.75) in Mogpo and Yeosu. When the consumption exceeds 10 m^3 per month, an additional charge per m^3 is levied -- starting at W 10 (US$0.025) in Suncheon, W 25 (US$0.062) in Gwangju, and W 30 (US$0.075) in Mogpo and Yeosu, and increasing in Gwangju and Mogpo to a level of about W 50 (US$0.125) when the consumption exceeds 100 m^3 per month. The average household, with about 8 persons, consumes about 23 m^3 per month but more than one household usually share one meter (outlet), resulting in relatively high marginal rates.

7. Available cost estimates for construction and operation of water supply systems in Gwangju region are unreliable (commercial accounting procedures are not used) and one of the purposes of the proposed water, sewerage and drainage study project component is to evaluate these estimates and propose modifications in the rate structures. Substantial additional revenues could possibly also be generated by reducing the leakage which now approaches 50%.

Sewerage Charges

8. Three systems for the collection and disposal of human waste are used in the four cities: water-borne sewerage, municipal "night soil" collection, and individually arranged night soil collection. In the latter case the household enters into an agreement with a local farmer who regularly collects the night soil and uses it for fertilizing -- typically, no payments are involved in this case. In Gwangju, only about 10% of the households have the night soil collection arranged in this manner.

9. Municipal night soil collection takes place once a week. The charge is W 15 per basket (18 liters) in Gwangju and W 10 per basket in the three other cities. 1/ A household of eight produces about 29 baskets per month (522 liters), giving an average monthly charge per household of

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1/ In Seoul, the rate is W 15 per basket, with collection twice every week in the central parts of the city.

W 435 in Gwangju and W 290 in the other cities. These charges cover the collection cost. In Gwangju, about 90% of the households have their night soil removed this way -- about 450 tons per day are transported with 35 handcarts and 20 trucks.

Road User Charges

10. Road user charges in Korea exceed expenditures on road construction and maintenance by a substantial margin both at the local and at the national level. For instance, in 1971 total revenues amounted to about W 59.9 billion, whereas only W 31.2 billion were expended. The major taxes are: fuel taxes, a transport tax levied on public passenger transport on roads, and a commodity tax (going to the national government); and a vehicle tax, a vehicle acquisition tax and a registration fee (going to the provincial, city and county governments). The local taxes are particularly high and form a substantial portion of local government revenues.

11. The fuel tax rates are 200% on gasoline and 10% on diesel fuel -- an increase of the latter is under consideration. On public passenger transport the tax rates are 20% on taxi fares, and 10% on bus fares. The annual vehicle tax varies with the type, size and weight of the vehicle, but for a private automobile it is about 25% of the purchase price -- W 128,000 to W 330,000 (US$320 to US$825) for cars with 4 cylinders or more, for instance. These high rates exert an effective restraint on the use of private automobiles. The acquisition tax is 1% of the purchase price of the vehicle. The registration fees vary but are of the order of magnitude of W 6,000 (US$15) per year. In the special city of Seoul and in Busan the tax rates are double the above.

Electricity Charges

12. Electricity charges generally cover capital and operating costs. Because of rising fuel cost, the Korea Electric Company (KECO) is reviewing its rates which were in effect since December 1, 1973 (see Table 1).

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Electricity Charges /1

Domestic	
Basic charge (W/month)	163.88
Energy charge (W/kwh)	15.53
Industrial (manufacturing)	
I: Contracted demand < 500 kw, supply voltage < 20 kv	
Demand charge (W/kw, month)	
- 50 kw	184
50 - 500 kw	146
500 + kw	109
Energy charge (W/kwh)	
- 90 kwh/kw of contracted demand	9.49
90 - 180 " " " "	6.50
180 - 360 " " " "	4.68
360 + " " " "	3.16
II: Contracted demand ≥ 500 kw, supply voltage = 20 kv	
Demand charge (W/kw, month)	
- 500 kw	152
500 + "	101
Energy charge (W/kwh)	
- 90 kwh/kw of contracted demand	9.49
90 - 180 " " " "	6.18
180 - 360 " " " "	4.30
360 + " " " "	2.71
III: Contracted demand ≥ 1,000 kw, supply voltage = 150 kv	
Demand charge (W/kw, month)	101
Energy charge (W/kwh)	
- 90 kwh/kw of contracted demand	9.49
90 - 180 " " " "	6.11
180 - 360 " " " "	4.21
360 + " " " "	2.70
Commercial and industrial (non-manufacturing)	
I: All contracted demand with supply voltage < 20 kv	
Demand charge (W/kw, month)	
- 50 kw	184
50 - 500 "	146
500 + "	109
Energy charge (W/kwh)	9.49
II: Contracted demand ≥ 500 kw, supply voltage ≥ 20 kv	
Demand charge (W/kw, month)	
- 500 kw	152
500 + "	101
Energy charge (W/kwh)	9.49
III: Contracted demand ≥ 1,000 kw, supply voltage ≥ 150 kv	
Demand charge (W/kw, month)	101
Energy charge (W/kwh)	9.49
Agriculture	
I: Supply for irrigation and drainage pumping	
Demand charge (W/kw, month)	54
Energy charge (W/kwh)	3.51
II: Supply for heating in greenhouses, etc.	
Demand charge (W/kw, month)	150
Energy charge (W/kwh)	4.50
III: Supply for other farming and breeding purposes	
Demand charge (W/kw, month)	150
Energy charge (W/kwh)	5.30

/1 As revised and effective on December 1, 1973. The preceding rates had been in effect since February 15, 1973.

ANNEX 10

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Estimated Schedule of Disbursements

IBRD Fiscal Year and Quarter		Cumulative Disbursements at End of Quarter (US$ Million)
1975	III	0.14
	IV	0.31
1976	I	2.02
	II	3.76
	III	5.51
	IV	7.25
1977	I	9.04
	II	10.47
	III	11.90
	IV	13.23
1978	I	13.63
	II	13.74
	III	13.90
	IV	14.89
1979	I	15.00

ANNEX 11

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Supervision Requirements

1. This would be the Bank's first urban-regional project in Korea. Consequently, there are no precedents on which the number and frequency of supervision missions can be based. While the services of local universities and personnel would be used to monitor and evaluate a portion of the project, namely the housing site and service subproject, the project is complex and requires the coordination by the Ministry of Construction of a number of participating agencies. In addition, a number of training programs are involved in the project, and require close supervision.

2. As a result, supervision missions totaling about 100 man-weeks are programmed between IBRD FY 1975 to FY 1978. These missions which include time for report writing are planned to coincide with the preparation and execution of key elements of the project. The following is a summary of the missions tentatively planned:

IBRD FY1975 - 20 man-weeks. For review of detailed engineering, discussions on the appointment of consultants, prequalification of contractors, assistance in the staffing of the fishery harbor complex, and review of UNDP Phase II preliminary proposals.

IBRD FY1976 - 28 man-weeks. For detailed discussions on consultants' work program, commencement of project construction and progress, review of the Gwangju Regional Development Unit staff, review of the selection procedure for site occupants, and review of training programs and procurement questions.

IBRD FY1977 - 28 man-weeks. Detailed discussions on project physical progress and problems of implementation, supervision of consultants' work, review of procedures for monitoring and evaluating housing sites and services and review of engineering and technical questions.

IBRD FY1978 - 24 man-weeks. Follow-up on progress of project implementation, review of work program of the GRDU.

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Project Execution

1. The Ministry of Construction (MOC), as Executing Agency, would be responsible for project implementation. A Gwangju Regional Development Unit - under MOC - would be established at the provincial level and be responsible for overall supervision. Upon completion of the construction phase, MOC would turn over the completed facilities to the following agencies for operation and management.

Housing Sites and Services

2. The housing sites would be turned over to the city administrations of Gwangju City, Mogpo and Yeosu for management, operation and maintenance. Each city would establish an Urban Project Unit (UPU) to be assisted by the Korea Housing Corporation (KHC). 1/ The Urban Project Unit would be responsible for selection of low-income occupants, the sale of serviced plots, coordination of development of community facilities with overall city programs, facilitate loans for the purchase of serviced plots for low-income families, and monitor the progress in the construction and implementation of the subproject. The Urban Project Unit would also be responsible (with the assistance of KHC) for the supervision of construction of model housing units in three cities using low-cost materials and family labor with a view to demonstrate the feasibility of utilizing low-cost (minimum standards) methods of construction under self-help schemes. These steps involve the following:

(a) During the site preparation period the KHC and the UPU's would interview potential family settlers.

(b) Criteria would be developed e.g. family income range within 20th to 30th percentile of the 1976 income distribution curve willing to use family labor,

(c) KHC and UPU's would work out house design and the procedure for construction - clearly showing elements that will be self-help and elements that will be contractor-built.

1/ In Suncheon, an Urban Project Unit would also be established although no housing site and service project is being financed in the loan. The Unit would be responsible for identification of potential projects and also be responsible for monitoring progress in the implementation of the city market subproject.

(d) KHC and UPUs would assist beneficiaries to select suitable contractor(s) for building parts of the house. KHC and UPUs would also provide assistance in purchasing material (e.g. cement, pipes, lumber, etc.);

(e) KHC and UPUs would keep record on costs, time, materials, labor, etc.;

(f) Model houses would be displayed for three months - during the selection of other potential settlers.

3. The MOC through the GRDU would ~~enter into an agreement~~ with the KHC to provide management and supervisory assistance to ~~each of the~~ Urban Project Units. KHC's assistance ~~would include,~~ but not necessarily be ~~limited~~ to: review of site planning and detailed design of each of the housing sites; disposition or sale of plots designated for low-, medium- and high-income groups; construction of low-cost housing models in three cities to demonstrate the feasibility of utilizing low-cost methods in self-help schemes; advise the UPU's on financial management and accounting; set up monitoring and evaluation standards and, supervise the construction of low-income housing. As agreed with the MOC, the personnel to be assigned by KHC will be under the supervision of the Project Manager. The maintenance of facilities in ~~each of the~~ housing sites would be the responsibility of each city to be carried out under its normal maintenance operation.

4. ~~One of the purposes of the housing~~ sites and services projects in the three cities would be to provide the necessary feedback information to MOC in order to ~~refine~~ the housing policy in the course of implementing programs.

5. The GRDU would enter into a contract with the Seoul National University and the Cheonam University to provide monitoring and evaluation services to the cities during the course of the implementation of the housing sites and services project.

6. Monitoring would include:

(a) the development of baseline information gathered from interviews of project applicants as well as information from selected areas in each city;

(b) review of physical differences between the occupant's former residence and proposed site;

(c) data on income and expenditure of households;

(d) periodic reports on the progress of essential infrastructure and services;

(e) the extent to which purchases of construction materials were made for self-help housing;

(f) extent of technical assistance received by site occupants from the UPU's and the KHC;

(g) the rate of housing construction (including self-help);

(h) the location of housing sites vis-a-vis employment centers, community facilities, and others;

(i) the effect of demonstration housing on household response to utilize low-cost housing construction methods and proposed designs;

(j) the effectiveness of financial arrangements with respect to terms, conditions and repayments.

7. The monitoring of the above information and evaluation - based on the objectives of the project - would be carried out at the beginning of project implementation period, one year later, and at the conclusion of the project implementation period or by closing date of the loan. Information obtained from the project evaluation exercise would be used to determine how close the objectives of the project were attained, and to provide the necessary feedback to the MOC in consonance with the implementation of the housing policy.

Yeosu Fishery Harbor Complex

8. Upon completion of construction, MOC would turn over the Yeosu fishery harbor complex to the Office of Fisheries (OOF). The OOF would appoint a harbor manager, an assistant manager for administration, a traffic officer and a port engineer for planning and maintenance. The harbor manager would report directly to the Directorate-General of the Office of Fisheries. The OOF has experience in the operation and management of over 60 fishery ports in Korea. The harbor manager would also be responsible for the development of the fishery industrial processing zone and the planning of the future expansion of harbor facilities.

9. The harbor management team would be assisted by qualified consultants and supporting staff. The duties and responsibilities of the proposed consultants are described in Annex 7.

Suncheon City Market

10. The city of Suncheon, would be responsible for maintenance and operation for the market facilities once completed. It is currently responsible for the operation of existing city markets. The mayor would

appoint a market manager who would be responsible for the operation and management of the market including the collection of fees and licenses, needed improvements, repayments of loan assumed to the central government and for keeping separate accounts for the project.

Access Roads

11. Upon completion, the access roads in the cities of Mogpo and Yeosu would be turned over to the respective cities for operation and maintenance.

Technical Assistance

12. The GRDU would be responsible for the conduct of studies, employment of consultants, and the development of an action program described in more detail in Annex 7.

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APPRAISAL OF THE SECONDARY CITIES REGIONAL PROJECT

Economic Rate of Return Analysis

Housing Sites and Services

1. In estimating the economic rates of return (ERR) for the housing sites and services components, the costs and benefits with all housing construction completed were considered over 30 years. Detailed cost estimates for the types of housing to be constructed were obtained during appraisal. The value of housing was assessed through a detailed survey carried out in November/December 1973 in four cities.

2. Costs. The project costs allocable to the housing sites were included with physical contingencies. These costs include land, site preparation, and on-site infrastructure. The cost of the land on which the community facilities and green areas are located was omitted from the project costs, as well as the cost of building these facilities. Their benefits were also excluded from the project benefit stream.

3. The land acquisition costs included in project costs reflect reasonably well the value of the land in alternative uses. The wages for construction workers reflect the labor situation in the region fairly well. They have been used to quantify the labor costs for contractor-built housing. Self-help labor involved in the construction of 40.6 m^2 units was priced at wages for unskilled labor in Gwangju. The annual maintenance costs for the houses have been estimated at 1% of construction cost.

4. Benefits. An imputed rental value of the housing to be constructed was estimated and used as a measure of project benefits. Based on a housing survey carried out in December 1973 and reviewed in August 1974, the annual rental values per pyong of building area are assumed to be: W 27,500 in Gwangju, W 22,000 in Mogpo and W 20,900 in Yeosu.

5. At the end of the assumed project life (30 years), the full value of the land is added to the benefit stream. Site preparation, infrastructure and housing are assumed to have no remaining value at that time. Employment effects, although not included in the calculation, was estimated separately and is shown in Table 6.

6. Rates of Return. With the above assumptions, and given the cost and benefit streams shown in Table 1, the ERR's for the three housing sites and services components are: 22% for Gwangju, 19% for Mogpo and 17% for

Yeosu. A 15% cost overrun would reduce the ERR's to 21% for Gwangju, 18% for Mogpo and 16% for Yeosu.

Yeosu Fishery Harbor Complex

7. Costs. All costs were included in the economic rate of return analysis, with physical contingencies. The high land price, about W 7,000 per pyong, is a good indicator of the opportunity cost of the land which is relatively flat, with good soil bearing capacity, and therefore suitable for industrial use.

8. Included in the component costs is also the cost of servicing the land which will be developed into industrial and commercial sites and sold.

9. Benefits. The following benefit streams have been identified and quantified (Table 2): benefits from the industrial sites, from time and fuel savings for the existing fishing fleet, from the fish catches of an expanded fishing fleet (off-shore and deep sea), and from the various facilities provided in the port.

10. About 17,600 pyong (net) of industrial and commercial sites will be developed as part of the project and sold, mainly to fish processing industries, at prices which will be set at a level that reflects the high value of the sites in this prime location, close to the port.

11. At present, most fishing boats over 50 GT which are based in Yeosu, land their catch in other ports, principally in Busan, in order to avoid the congestion in the Yeosu port. By being able to land their catch in the proposed new port, these boats would save operating costs, mainly fuel, as well as time. The fuel savings would amount to about W 9 million per year. The time savings would allow the boats to make several more fishing trips per year and the net value of the additional catch has been estimated at about W 60 million per year.

12. The main benefits of the proposed port are derived from the expansion of fishing activities that it would permit. Several new boats are already under construction in anticipation of the new port. It is estimated that the catch landed in Yeosu, with the new port constructed, would increase from about 74,000 tons in 1972 to about 231,000 tons by 1981, after which year the catch has been assumed to remain constant. The total market value of the catch unloaded in the port would increase from W 6,600 million in 1972 to about W 13,280 million by 1981.

13. Finally, substantial additional benefits will be derived from the use of specific port facilities, such as the auction market, ice-making equipment and storage sheds. The present relatively low prices for similar facilities in Korea were used to quantify these benefits, resulting in an annual value of about W 160 million by 1981.

14. Rate of Return. The cost and benefit streams (Table 2) discussed above give an ERR of 33%. A 15% cost overrun would lower the rate to about 29%.

Suncheon City Market

15. Costs. The costs of land acquisition, site preparation, on-site infrastructure and buildings were included, with physical contingencies. The purchase price for the land, W 1,900 per pyong reflects reasonably well the value of the land in alternative uses. The annual maintenance cost estimates are based on an assumed 3% of capital cost, excluding land. The management cost estimates are based on the city's staffing proposal for the market.

16. Benefits. Surveys and analyses of rental values for existing stores were carried out in late 1973. It was found that the quality of the structures and the services provided are highly inadequate in these stores, particularly from the point of view of public health.

17. A serious effort is now under way by the city to upgrade the present markets and to induce improvements in private stores. The old Bookboo (North) Market has been replaced by a new structure to be completed by November 1974. The new market will have a floor area of 1,500 py built to modern standards. A total of 307 stores would be provided at monthly rents of about W 1,000 per pyong. In spite of this increase in rent, 537 approved applications were received.

18. The proposed new Namboo Market will have a more advantageous location than the new Bookboo Market but, in order to be conservative, the same present rent level of W 1,000 per pyong per month was used to quantify the benefits from the store space that will be provided.

19. An area of about 2,700 py would be provided for a 5-day market with open stalls and about 3,000 py would be provided for a daily vegetable market, half of which would be covered. An estimate of the benefits from these parts of the proposed market component was obtained by applying W 60/py a day (the average of the charge in the old market and the proposed charge in the new market) to the 5-day market area every fifth day and W 50/py a day for the daily market area. The utilization of these areas is assumed to increase from 25% in 1977 to 100% in 1981.

20. Rate of Return. The proposed market component shows an ERR of 17% with the above-mentioned cost and benefit streams (Table 3). A 15% construction cost overrun would reduce the ERR to about 15%.

Access Roads [1/]

21. Costs. The costs of land acquisition, compensation, and construction were included, with physical contingencies. In the cases where relocation of families was involved, interviews were carried out to ensure that the compensations to be paid reflect the economic and social costs involved.

22. Benefits. Projections were made of the traffic volumes on the proposed roads (Table 4). The 1973 base for these projections was obtained through traffic surveys carried out in the two cities in September 1973. Relatively modest annual increases were assumed after project completion in 1977 with an average of 5.2% in Mogpo and 7.2% in Yeosu. The volume of truck traffic was assumed to increase most rapidly, 10.5% and 13.0% per year, respectively, due to the interdependence between these roads, the housing site and the industrial estate in Mogpo and the fishery harbor in Yeosu. The traffic volumes were assumed to remain constant from 1986 on.

23. The benefits of the proposed roads were determined by comparing vehicle operating costs and passenger travel times with and without these roads. The operating costs and the travel times would be reduced because of better roads, shorter distances and higher speeds. To estimate the value of passenger travel time savings, a value of W 50 per hour was used for car passengers and W 25 per hour for bus passengers, less than 25% of the corresponding wage rates in the region.

24. Rates of Return. Based on the above cost and benefit streams (Table 5) and with passenger time savings included, the ERR's are 16% for Mogpo and 34% for Yeosu. If costs increase by 15%, the ERR drops to 14% for Mogpo and 31% for Yeosu.

Summary

25. A summary of the estimated ERR's are shown below:

1/ The industrial area access road in Mogpo and the Seogyo Dong - Orim Dong road in Yeosu.

	%
Housing Sites and Services	
Gwangju	22
Mogpo	19
Yeosu	17
Fishery harbor complex - Yeosu	33
City market - Suncheon	17
Roads	
Mogpo	16
Yeosu	34
Total for all project components	28

Sensitivity Analysis

26. The sensitivity of the project components' rates of return to assumptions about cost variations and benefit variations is shown below:

	Under Present Project Assumptions	15% Increase in Construction Cost	10% Decrease in Benefits	10% Increase in Benefits
Housing Sites and Services				
Yeosu	17%	16%	16%	19%
Mogpo	19%	18%	18%	21%
Gwangju	22%	21%	20%	24%
Suncheon City Market	17%	15%	14%	19%
Yeosu Fishery Harbor Complex	33%	29%	30%	35%
Roads				
Mogpo /1	16%	14%	15%	17%
Yeosu /1	34%	31%	32%	37%

/1 Benefits include passenger time savings.

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Economic Cost and Benefits - Housing Sites and Services
(W 000)

	Costs			Benefits
	Project (Land, site preparation, on-site infrastructure) (1)	Housing Construction (2)	Maintenance (3)	Imputed Rental Value & Land
Yeosu				
1974	103,434			
1975	142,857			
1976	95,238	125,422		
1977	0	160,650	1,254	47,795
1978	0	154,756	2,861	106,819
1979	0	0	4,409	164,793
1980-	0-	0-	4,409-	164,793-
2002	0	0	4,409	164,793
2003	0	0	4,409	268,227
Mogpo				
1974	53,990			
1975	191,125			
1976	127,417	154,989		
1977	0	186,731	1,550	62,039
1978	0	186,731	3,417	135,672
1979	0	0	5,284	209,305
1980-	0-	0-	5,284-	209,305-
2002	0	0	5,284	209,305
2003	0	0	5,284	263,295
Gwangju				
1974	214,353			
1975	131,598			
1976	87,733	164,158		
1977	0	206,622	1,642	82,041
1978	0	204,933	3,708	183,470
1979	0	0	5,757	284,067
1980-	0-	0-	5,757-	284,067-
2002	0	0	5,757	284,067
2003	0	0	5,757	498,420

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Economic Costs and Benefits - Yeosu Fishery Harbor Complex
(W Million)

	COSTS		BENEFITS				
					Net Benefits from Fleet Increase		
	Project[2] (1)	Maintenance and Management (2)	Sale of Industrial Sites (3)	Time and Fuel Savings, Existing Fishing Fleet (4)	Off-Shore Fishing (5)	Deep Sea Fishing (6)	Net Benefits from Marine Center, Storage Sheds, etc. (7)
1974	148	0	0	0	0	0	0
1975	1,686	0	0	0	0	0	0
1976	2,094	0	293	0	0	0	0
1977	556	83	293	0	870	110	90
1978	0	165	293	69	1,000	275	110
1979	0	165	0	69	1,130	440	130
1980	0	165	0	69	1,260	605	150
1981	0	165	0	69	1,390	770	160
1982 - 2003[1]	0	165	0	69	1,390	770	160

[1] In year 2003 the land value (W 143 million) is added to the benefit stream, assuming the same unit value as for the industrial land in 1974.

[2] Including the cost of the access road.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic Costs and Benefits - Suncheon Market

(W million)

	Costs		Benefits	
	Project (land, infra-structure, buildings) (1)	Maintenance, Management, and Land (2)	Store Rental Value (3)	Open Market Rental Value (4)
1974	30	0	0	0
1975	52	0	0	0
1976	175	0	0	0
1977	98	11	51	8
1978	0	14	56	27
1979	0	14	27	39
1980	0	15	19	51
1981	0	15	19	60
1982 -	0-	15-	19-	60-
2002	0	15	19	60
2003 /1	0	15	19	60

/1 The land value (W 22 million) is added to the benefits in Column (3) in year 2003.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Estimated Daily Traffic Volumes in 1977 and 1986 on Project Roads

	Cars	Buses	Trucks	Total
Mogpo: Industrial Estate Access Road				
1977	1,263	256	571	2,090
1986	1,510	398	1,402	3,310
Annual growth rate, %	2.0	5.0	10.5	5.2
Yeosu: Seogyo Dong-Orim Dong				
1977	1,308	797	934	3,039
1986	1,706	1,184	2,807	5,697
Annual growth rate, %	3.0	4.5	13.0	7.2

Sources: Surveys carried out in September, 1973 and reviewed in July 1974.

KOREA

SECONDARY CITIES REGIONAL PROJECT

Economic Costs and Benefits - Roads

(W million)

	Costs: Land Acquisition and Construction (1)	Benefits: Excluding Passenger Time Savings (2)	Benefits: Including Passenger Time Savings (3)
MOGPO:			
Access Road			
1974	78	0	0
1975	213	0	0
1976	284	0	0
1977	0	75	81
1978	0	80	86
1979	0	85	91
1980	0	91	97
1981	0	97	104
1982	0	103	110
1983	0	110	118
1984	0	118	126
1985	0	127	135
1986-2003	0	136	145
YEOSU: Seogyo Dong - Orim Dong			
1974	61	0	0
1975	94	0	0
1976	127	0	0
1977	94	119	131
1978	0	128	140
1979	0	137	150
1980	0	148	162
1981	0	160	174
1982	0	173	188
1983	0	188	204
1984	0	204	220
1985	0	222	239
1986-2003	0	241	259

KOREA

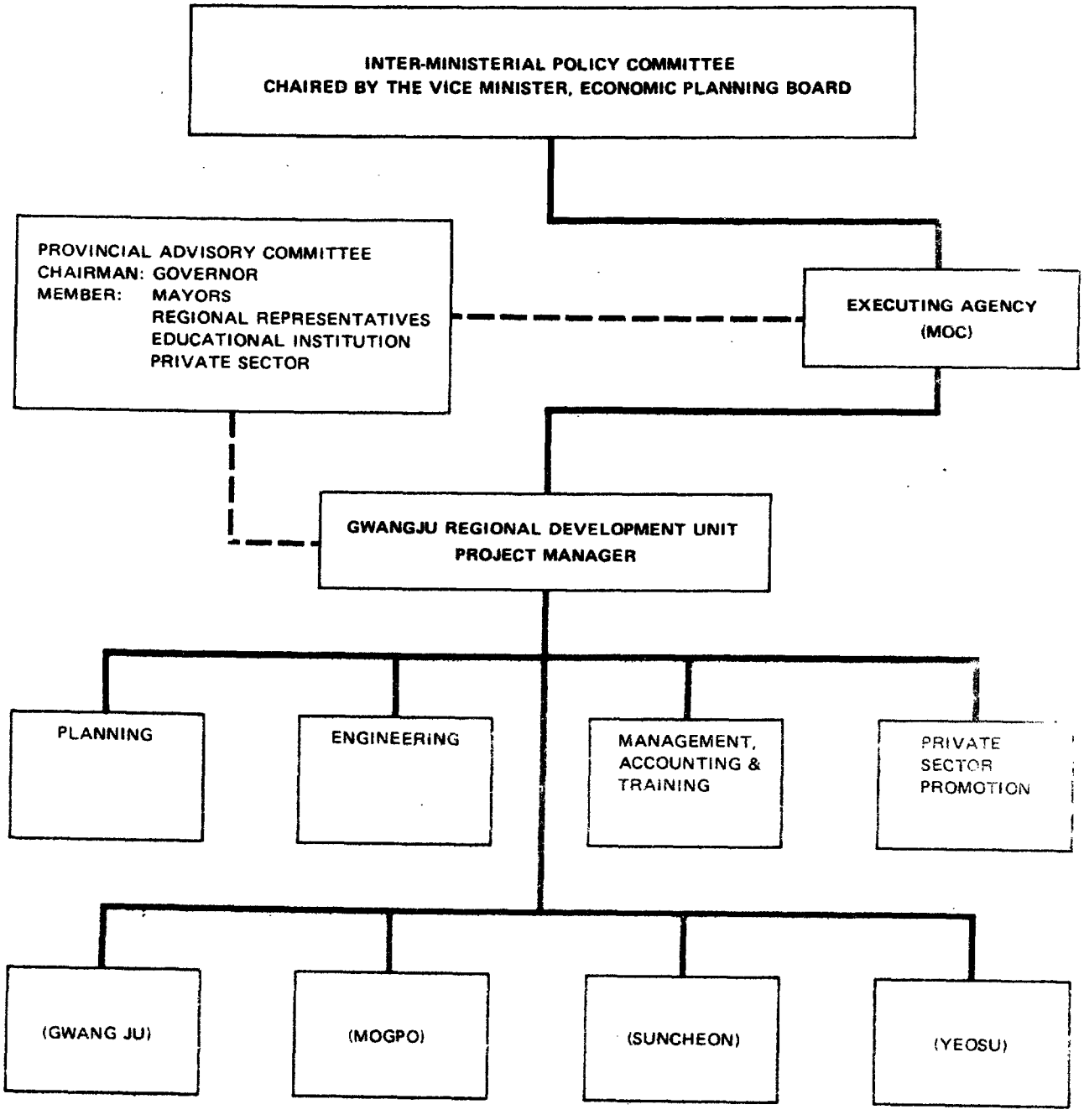
SECONDARY CITIES REGIONAL PROJECT

Employment Effects

(Number of Full-Time Jobs)

	Direct Employment Effect of the Project	Direct Employment Effect of On-Site Housing Construction	Direct Long-Term On-Site Employment Effect	Total Direct Employment Effect
1975	1,850	0	0	1,850
1976	2,800	410	0	3,210
1977	1,310	515	1,150	2,975
1978	0	510	2,500	3,010
1979	0	0	3,300	3,300
1980	0	0	4,100	4,100
1981	0	0	4,600	4,600
1982	0	0	4,600	4,600

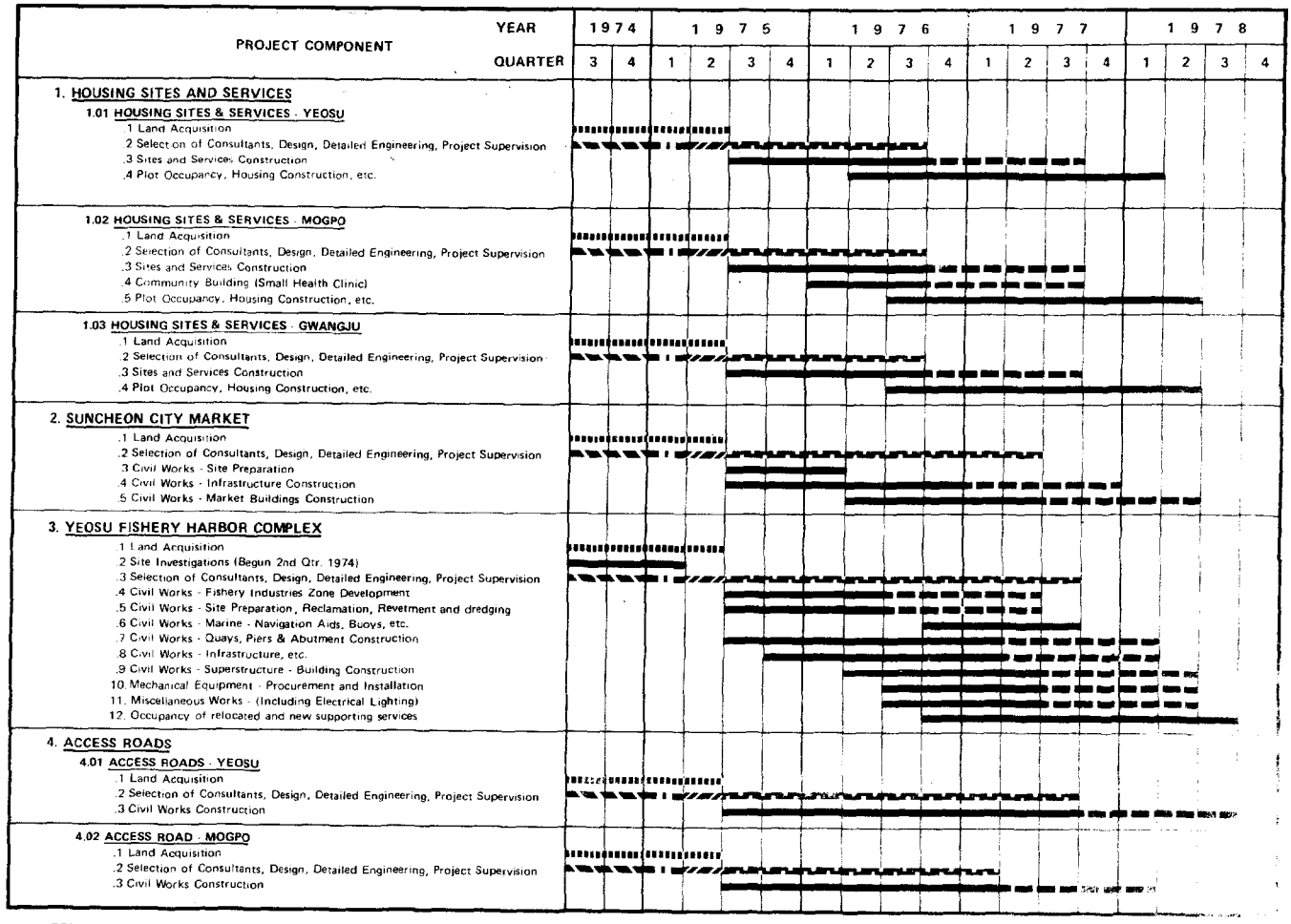
KOREA: SECONDARY CITIES REGIONAL PROJECT
PROJECT ORGANIZATION FOR CONSTRUCTION*



*Upon completion of the construction phase, the Provincial Government of Jeonra Nam would be responsible for the supervision of the facilities turned over to the cities. Urban Project Units would be established by the cities.

World Bank–8482(R)

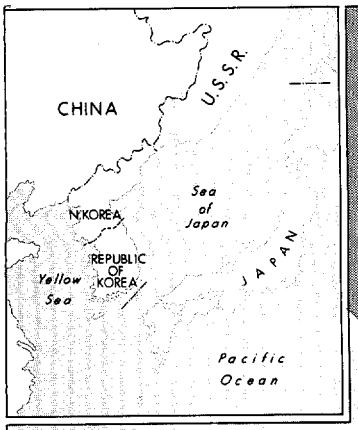
KOREA - SECONDARY CITIES REGIONAL PROJECT
CONSOLIDATED IMPLEMENTATION SCHEDULE



LEGEND:

- Acquisition of Land by Government
- Selection of Consultants
- Design, Detailed Engineering, Preparation of Contract Documents
- Bid (Tender) Period, Selection of Bid, Detailed Engineering Continued
- Project Supervision
- Construction Period
- Guarantee Period (Period to make good defective work)

IBRD 10970
MARCH 1974



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

NORTH KOREA

East Sea

Yellow Sea

Cheorwon
Geumhwa
Sokcho
Whacheon
Yanggu
Yangyang
Imjin R.
Munsan
Chuncheon
Jumunjin
Gyeongpodae
Gangreung
Gangwha
Euijeongbu
Hongcheon
Donong
N. Han River
Samwha
Mukho
SEOUL
Hoengseong
Yeoryong
Samcheok
Incheon
Yangpyeong
S. Han River
Saemal
Weonju
Icheon
Yeoju
Jangseong
Suwon
Jecheon
Hayeong
Maepo
Uljin
Ryeongtaek
Anseong
Chungju
Danyang
Yeongju
Manripo
Onyang
Cheonan
Hongsong
Yesan
Cheongju
Eunseong
Andong
Jochiweon
Jeomchon
Jinbo
Gongju
Boeun
Yeongdeog
Sangju
Nakdong River
Buyeo
Daejeon
Nonsan River
Yeongdong
Gimcheon
Pohang
Geum
Janghang
Gunsan
Iri
Yeoncheon
Gyeongju
Kampo
Daegu
Jeonju
Gimje
Gochang
Ulsan
Changnyeong
Seobseongpo
Namweon
Damyang
Yeonwha
Yeonggwang
Masan
Jinju
Gimhae
Jinhae
Pochon
Gwangju
BUSAN
Hwasun
Naju
Yeongsanpo
Samcheonpo
Suncheon
Yongsan
Chungmu
Jansengpo
Beolgyo
Mokpo
Yeosu
Mijo
Seonjjeon
Gangjin
Goheung
Singeum
Wando
Jeju
Seogipo
JEJU

0 20 40 60 80 100
KILOMETERS

KOREA
PLANNING REGIONS IN KOREA

- PLANNING REGION BOUNDARIES
- PLANNING SUBREGION BOUNDARIES

EXISTING NATIONAL HIGHWAYS
- EXPRESSWAY (FOUR LANE TOLL)
- NATIONAL HIGHWAYS (PAVED)
- NATIONAL HIGHWAYS (UNPAVED)

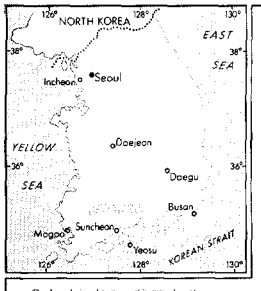
- FEASIBILITY STUDY AND ENGINEERING — TECHNICAL ASSISTANCE CR 54-KO; FIRST PROJECT LOAN 769-KO
- CONSTRUCTION AND IMPROVEMENT — SECOND PROJECT
- PAVING — SECOND PROJECT
- RAILWAYS
- AIRPORTS (INTERNATIONAL)
- PROVINCIAL CAPITALS
- PROVINCIAL BOUNDARIES
- INTERNATIONAL BOUNDARIES

125° 126° 127° 128° 129°
38° 37° 36° 35° 34°

IBRD 11082

NOVEMBER 1974

KOREA
SECONDARY CITIES REGIONAL PROJECT
Gwangju Housing Sites and Services
FIRST STAGE



The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates.

- Project boundary, first stage
- Lots
- Playgrounds and parks
- Roads, footpaths (project)
- Rivers

Water supply network:
- 75mm diameter lines
- 150mm diameter lines
- 150mm diameter line (outside of project)
- Fire hydrants

Drainage network:
- 250mm diameter lines
- 300mm diameter lines
- 450mm diameter lines
- Culvert
- Manholes, 1.20m diameter

Electric distribution network:
- Power lines
- Electric poles, concrete
- Electric poles with transformers

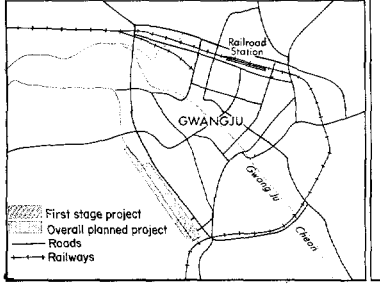
Street lighting network:
- Power lines
- Street lights

Existing electric transmission line

SUN HWAN DO RO (100' ROAD)

GEOUG NAG CHEON

Connecting to existing water supply

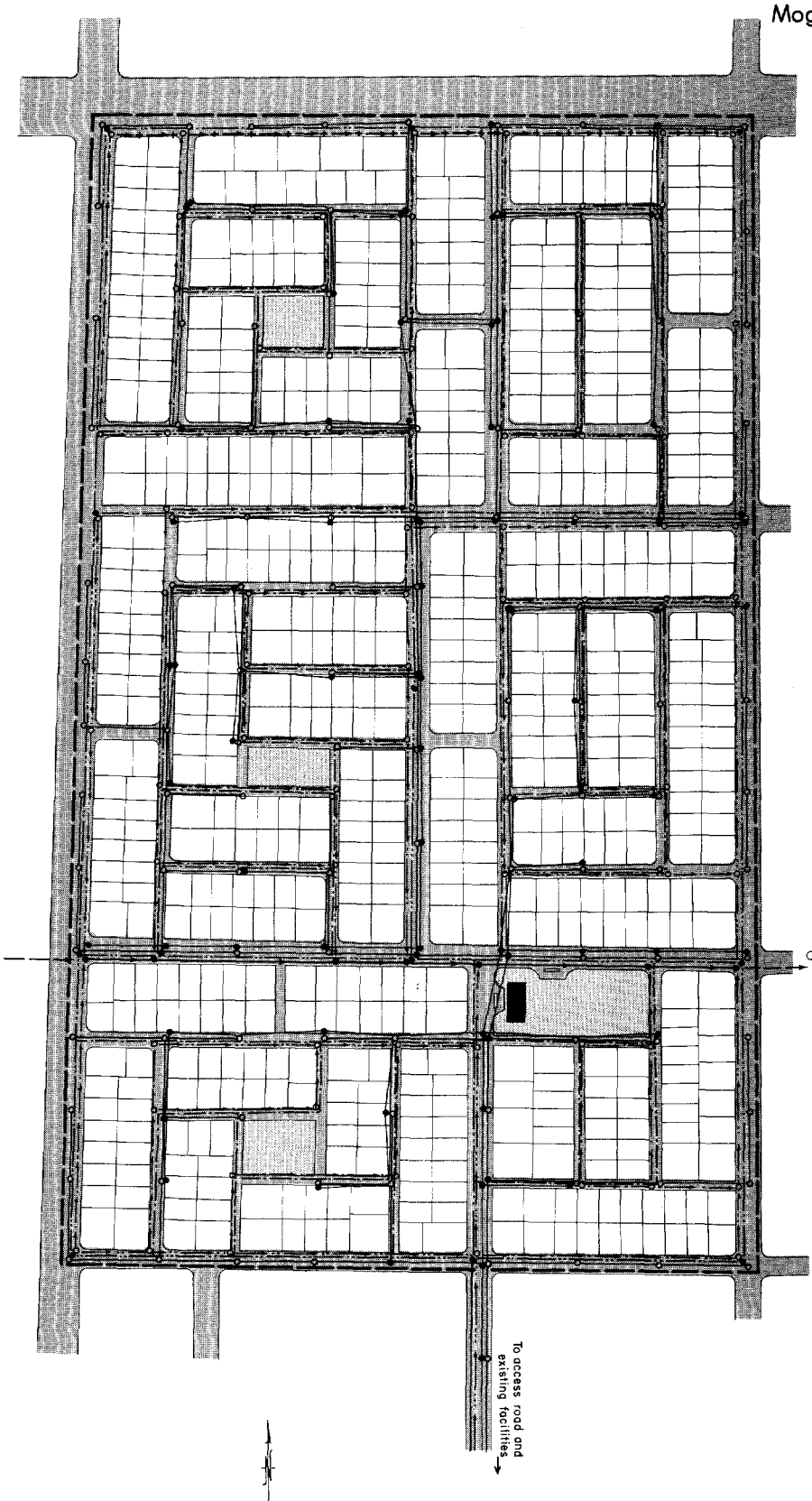


0 20 40 60 80 100
METERS
0 20 40 60 80 100
YARDS

IBRD 11083

NOVEMBER 1974

KOREA
SECONDARY CITIES REGIONAL PROJECT
Mogpo Housing Sites and Services
FIRST STAGE



- Project boundary, first stage
- Lots
- Playgrounds
- Roads, footpaths (Project)
- Health clinic

Water supply network:

- 75mm diameter lines
- 100mm diameter lines
- 150 mm diameter line (outside of project)
- Fire hydrants

Drainage network:

- 250mm diameter lines
- 300mm diameter lines
- 450 mm diameter lines
- 600mm diameter line
- 1500mm diameter line
- Manholes, 1.20 m diameter
- Manholes, 1.80 m diameter
- Existing open drains

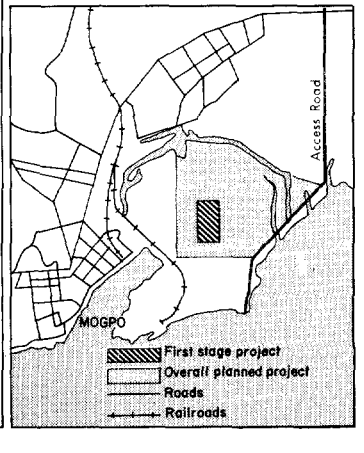
Electric distribution network:

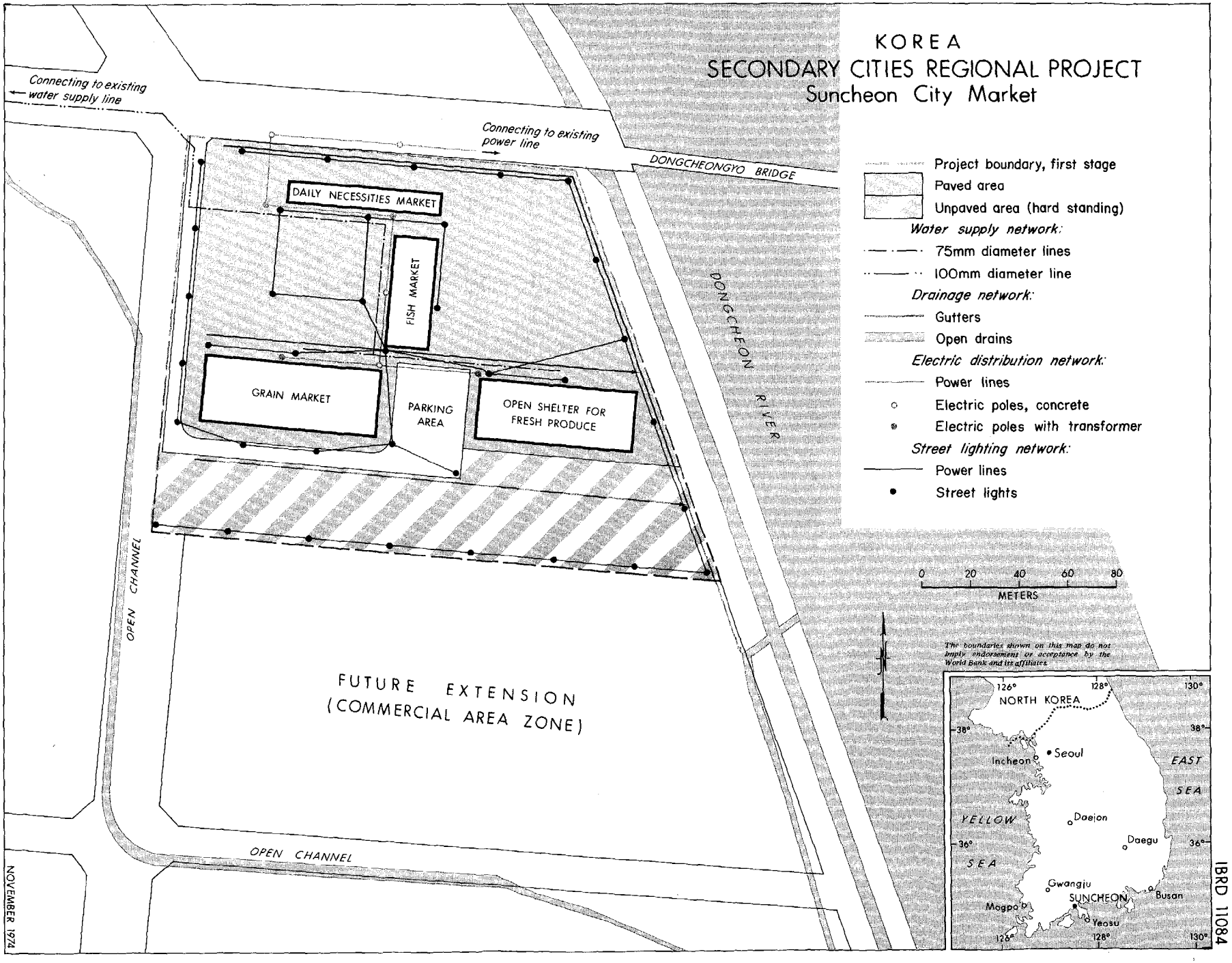
- Power lines
- Electric poles, concrete
- Electric poles with transformer

Street lighting network:

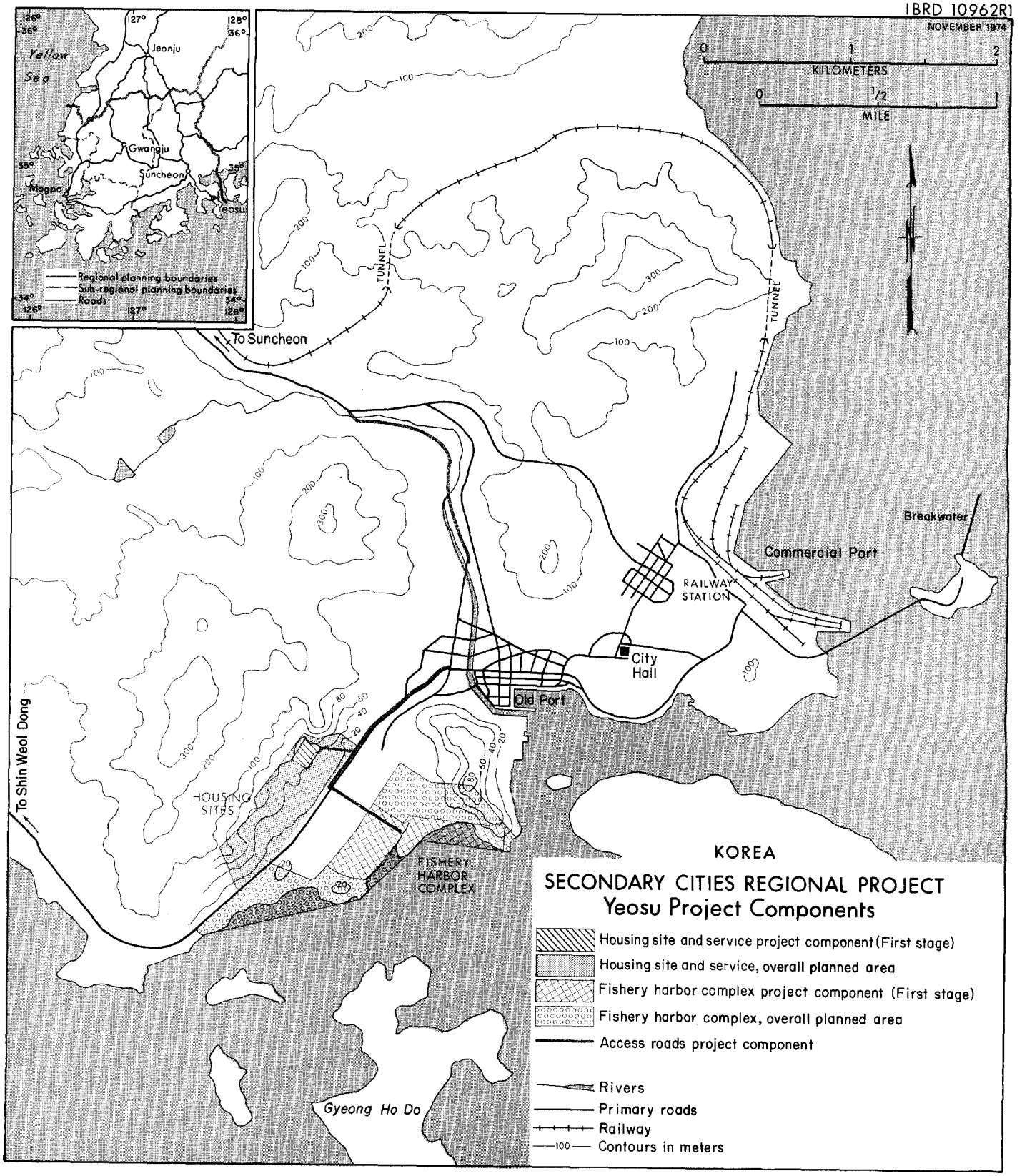
- Power lines
- Street lights

Note: Flat terrain




KOREA
SECONDARY CITIES REGIONAL PROJECT
Suncheon City Market
Connecting to existing water supply line
Connecting to existing power line
DONGCHEONGYO BRIDGE
DAILY NECESSITIES MARKET
FISH MARKET
GRAIN MARKET
PARKING AREA
OPEN SHELTER FOR FRESH PRODUCE
DONGCHEON RIVER
OPEN CHANNEL
FUTURE EXTENSION
(COMMERCIAL AREA ZONE)
OPEN CHANNEL
Project boundary, first stage
Paved area
Unpaved area (hard standing)
Water supply network:
75mm diameter lines
100mm diameter line
Drainage network:
Gutters
Open drains
Electric distribution network:
Power lines
Electric poles, concrete
Electric poles with transformer
Street lighting network:
Power lines
Street lights
0 20 40 60 80
METERS
The boundaries shown on this map do not imply endorsement or acceptance by the World Bank and its affiliates
NORTH KOREA
Seoul
Incheon
Daejon
Daegu
Gwangju
SUNCHEON
Busan
Mogpo
Yeosu
EAST SEA
YELLOW SEA
126°
128°
130°
38°
36°
NOVEMBER 1974
IBRD 11084

IBRD 10962R1
NOVEMBER 1974



KOREA

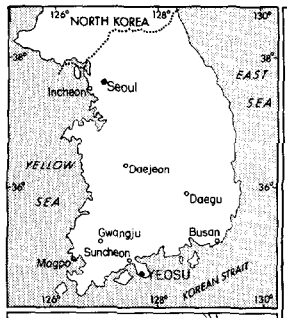
SECONDARY CITIES REGIONAL PROJECT
Yeosu Project Components

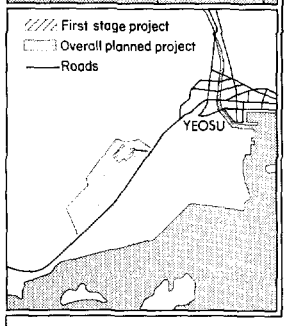
- Housing site and service project component (First stage)
- Housing site and service, overall planned area
- Fishery harbor complex project component (First stage)
- Fishery harbor complex, overall planned area
- Access roads project component

- Rivers
- Primary roads
- Railway
- —100— Contours in meters

IBRD 11085

NOVEMBER 1974





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KOREA
SECONDARY CITIES REGIONAL PROJECT
Yeosu Housing Sites and Services
FIRST STAGE

- Project boundary, first stage
- Lots
- Playgrounds
- Roads, footpaths (project)
- Rivers
- Contours, 5m intervals

Water supply network:

- 75mm diameter lines
- 100mm diameter lines
- Fire hydrants

Drainage network:

- 250mm - 1200mm diameter lines
- Gutter
- Culvert
- Manholes, 1.20m diameter
- Manholes, 1.80m diameter

Electric distribution network:

- Power lines
- Electric poles, concrete
- Electric poles with transformers

Street lighting network:

- Power lines
- Street lights

WATER DISTRIBUTION CENTER:

BOOSTER PUMP STATION

To existing facilities

ACCESS ROAD

0 20 40 60 80 100
YARDS

0 20 40 60 80 100
METERS

IBRD 11086
NOVEMBER 1974